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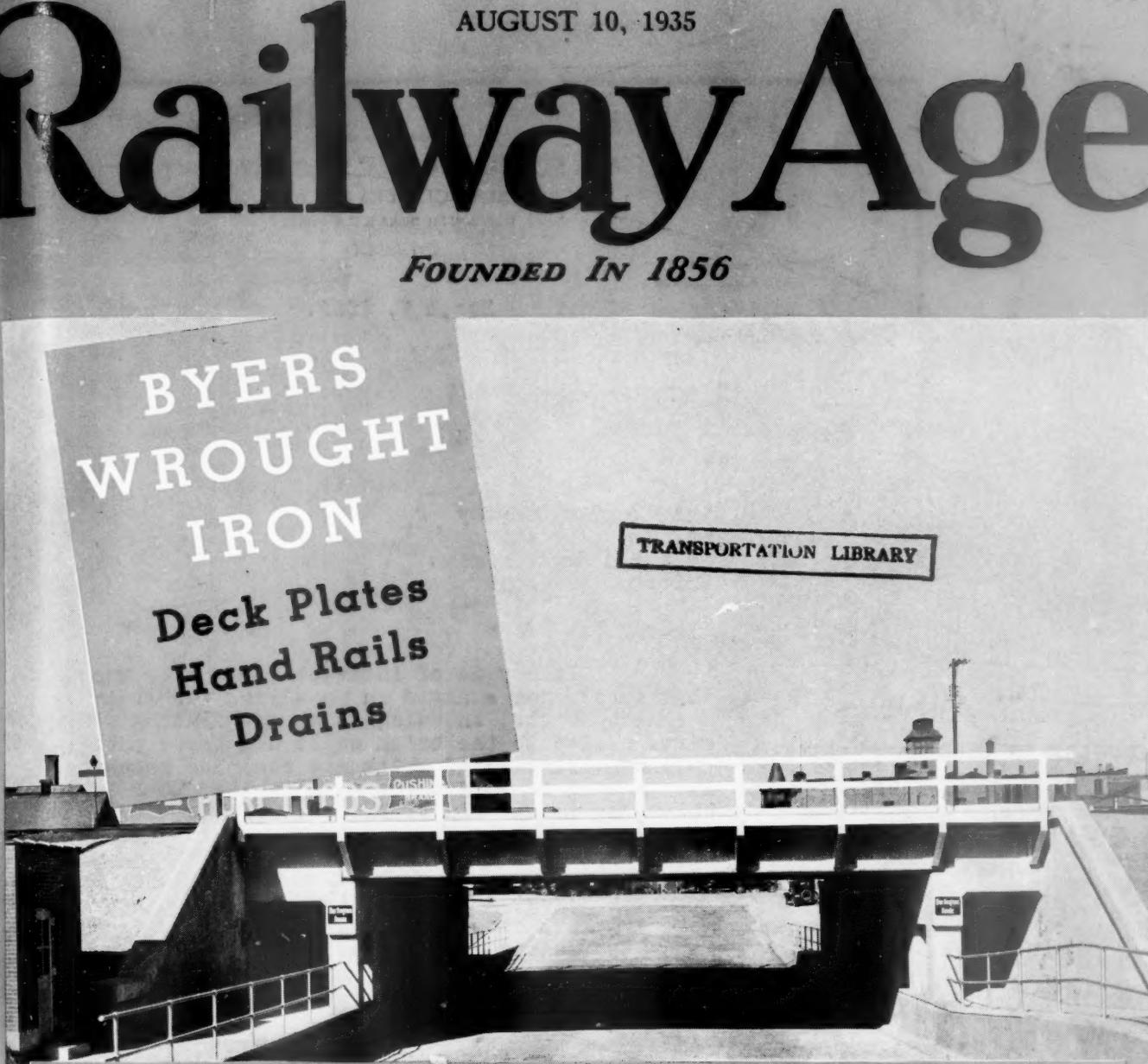
AUGUST 10, 1935

Railway Age

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Are removing old limits of design

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"Redistribution" Versus Increased Production and Income

The passage by Congress this week of the bill for regulation of interstate transportation by highway carriers is significant for several reasons. It is a belated recognition of the unfairness and harmfulness of past government policies of strictly regulating the railways without subsidizing them, and of subsidizing other carriers without regulating them. By reducing destructive competition in transportation, which has been destructive principally because of the inequality and unfairness of government policies, it will tend to increase the net earnings, and consequently the buying power, of legitimate carriers, and thereby to increase their purchases, especially those of the railroads, from the durable goods industries. The bill was supported by the railroads, by organizations of railroad employees, by operators of buses and trucks rendering regular service, and, consequently, by President Roosevelt; and its passage illustrates the fact that, even in a period such as the present, constructive legislation is not impossible of attainment by intelligent, organized and prolonged effort.

This measure is but part of a transportation legislative program long advocated by the railways and their employees, and recently strongly supported by Co-ordinator Eastman, the Interstate Commerce Commission and many business interests. The program includes also regulation of water carriers and repeal of the long-and-short-haul section of the Interstate Commerce Act, which has been recommended by the House Committee on Interstate Commerce in an able and comprehensive report. The application of comparable regulation to all carriers and withdrawal of subsidies from those competing with the railways would contribute in important measure toward increasing buying from the durable goods industries and lightening the increasing burden of taxation upon the public, which are the principal means by which the depression must be attacked if it is ever to be ended.

Production—the Real Problem of Recovery

It is a fact which is astounding to all who know anything about economics, and which should be astounding to everybody, that, after more than five years of depression, the most important economic problem with which the American people have been confronted throughout the depression, and with which they are still confronted, is receiving little consideration or discussion. Week after week we read and hear discus-

sion of the redistribution of wealth and income; of legislation of many kinds to accomplish such redistribution; of whether acts for this purpose will be constitutional; of whether, if not, efforts will be made to change the Constitution, and of what will be the political effects upon those who try to change it.

None of this discussion touches, excepting indirectly, upon the most important and vital of current problems. *This is the problem of increasing the national income.* And the problem of increasing the national income is the problem of *increasing the production of goods*—all goods, both consumers' and durable, but especially the latter. Why go on interminably deliberating and haranguing about redistribution while the volume of production is still much less than is necessary to restore employment and prosperity, and actually declined during the last year? Why should not both government and business devote more real consideration to the problems of increasing production in order that, if there is to be redistribution of wealth and income, there will be enough of them produced to be worth redistributing?

Who Is Suffering from Lack of Production?

In the year ending June 30, 1934, the number of cars loaded with freight in the United States was 31,276,083. In the year ending June 30, 1935, it was only 30,561,320. This was 42 per cent less than in 1929. Car loadings are an approximately accurate measure, and the only approximately accurate measure, of the total volume of all kinds of goods—consumers' and durable—produced in the country. The production of physical goods is, obviously, the only source of wealth and income. The production of durable goods, which are used mainly in the production of consumers' goods, is the only means by which the national wealth can be increased, or even maintained. Only the production of consumers' goods can provide the population with most of the necessities, comforts and luxuries required to maintain or raise the standard of living. Facts which show that total production is still 40 per cent less than it was six years ago, and that it has not increased during the last year, demonstrate, then, that less than two-thirds as much actual wealth and income are being produced as six years ago, and that no progress has been made in the last year toward increasing their production.

Who is suffering from this decline of production?

On the basis of such data as are available, the *Railway Age* estimates that the national income was divided as follows in 1929 and 1934:

Persons with annual incomes—	1929	1934	Decrease	Per cent decrease
Over \$25,000...\$16,684,000,000	\$3,337,000,000	\$13,347,000,000	\$10,010,000,000	80
\$1,500 to \$25,000 49,492,000,000	29,695,000,000	19,797,000,000	9,900,000,000	60
Under \$1,500...26,774,000,000	11,968,000,000	14,806,000,000	2,838,000,000	55
Totals	\$92,950,000,000	\$45,000,000,000	\$47,950,000,000	53

The decline in the national income, as measured in money, was relatively greater than the decline of production because of decline in the prices in which income was measured. The declines in the *aggregate* incomes of the higher income classes were relatively greater than in those of the lower income classes because so many persons in the higher income classes in 1929 had been pushed down into lower income classes in 1934. It will be noted, however, that the declines in both the *aggregate* income of the class receiving less than \$1,500, and the *aggregate* decline of the class receiving from \$1,500 to \$25,000, were greater than the decline in the *aggregate* income of those receiving over \$25,000. It will also be noted that the decline in the *aggregate* income of all persons receiving less than \$25,000 in 1929 was almost \$35,000,000,000, or 78 per cent of the total decline in the national income. In other words, the middle class and the poor had suffered almost four-fifths of the effects of the decline in production.

Durable Goods Industries Still Lag

How much smaller, absolutely and relatively, was the production of different classes of commodities in the year ending June 30, 1935, than in 1929? The accompanying table giving car loadings in 1929 and in the year ending June 30, 1935, approximately answers this question. The percentages of decline

	Freight car loadings		Per cent decline
	Year ending 1929	Year ending June 30, 1935	
Live Stock	1,419,191	987,896	20
Coal	9,095,271	6,130,679	33
Grain and Grain Products	2,396,195	1,534,002	40
Mdse. L.C.L.	13,165,573	7,481,794	43
Miscellaneous	20,547,169	11,492,793	44
Coke	634,427	309,437	51
Forest Products	3,248,408	1,182,419	64
Ore	2,261,566	812,007	64

ranged from 20 per cent for live stock, which is produced almost entirely for the consumers' goods industries, to 64 per cent for forest products and ore, which are entirely raw materials for the durable goods industries. The decline in loadings of coal was only 33 per cent because it is largely used for domestic heating and also in production of consumers' goods. The decline in miscellaneous freight was about the average, or 44 per cent because it consists of both consumers' and durable goods. The declines all along the line were obviously in proportion to whether the different classes of commodities shipped ultimately found their way more largely into the consumers' goods market or into the durable goods market.

The foregoing facts demonstrate conclusively, first, that the principal thing the matter with the income of

rich, middle class and poor alike is that the production of the goods that actually constitute that income is much less than before the depression, and, second, that the production of durable goods is still relatively much smaller than the production of consumers' goods. In view of such conclusive facts, why should practically all the emphasis be placed by most of the politicians in Washington upon redistribution of the national income, and almost none upon increase of production of the goods which actually constitute the national income? And why, especially, while there is so much agitation about "sharing-the-wealth," is virtually nothing being done to increase the production of the durable goods which, together with land, principally constitute the national wealth?

"Sharing-the-Wealth" versus Producing Wealth

Yet, plainly, this is what is occurring in Washington. AAA and the Guffey coal bill are intended to restrict production. The work-relief act is being administered almost entirely as a measure to give relief to the unemployed, not to promote their productive employment. The Wagner industrial disputes act is intended solely to give labor unions power that will enable them to get a larger part of the national income for their members. The "social security" legislation is intended to tax those with larger than average incomes and thrift for the supposed benefit of those with smaller than average incomes and thrift. The "share-the-wealth" taxation being considered has the same purpose.

The most vital question regarding all these measures is—what effects will they have upon production and the total national income? A restoration of production and the national income to what they were in 1929, even if they were distributed as they were then, would increase by *fifteen billion* dollars the aggregate incomes of persons who were then receiving less than \$1,500 a year, or by an amount almost five times as large as the present *aggregate* income of all persons with incomes over \$25,000 annually. It would increase by *thirty-four billion* dollars the aggregate income of all who had incomes in 1929 of less than \$25,000 a year, or *ten* times as much as the present *aggregate* income of all who now have incomes over \$25,000 annually. And yet the question of what might be the effects upon production and the total national income of adoption of all the various schemes for redistributing them which are being adopted or promoted is apparently being given almost no consideration by their sponsors, to whom apparently, the only vital question is in regard to their probable political effects.

Is it possible for government and business to adopt policies that will increase production? It always has been increased to unprecedented volume after every past depression—mainly, however, by the efforts of business men unhindered by socialistic government policies of redistribution. Somewhat more than a year ago Congress passed the only measure that it enacted within the two years before its recent passage of the

motor carrier bill even ostensibly to stimulate production. This was the National Housing Act, which was indorsed by business—by both the Durable Goods Industries Committee and the Chamber of Commerce of the United States. And, significantly enough, one of the most important developments within the last year has been the increase in contracts for residential construction, remodelling and repairs. These contracts amounted in the first one-half of 1933 to about \$183,000,000; in the first one-half of 1934 to about \$225,000,000; and in the first one-half of 1935 to about \$350,000,000. They are still far less than normal; but, relatively, they have largely increased, and are still increasing, while stagnation has continued in most other durable goods industries.

Will "Redistribution" Hinder Recovery?

The terrible and tragic lag in production and employment is principally in the durable goods industries. Excepting automobiles, five-sixths of durable goods are bought by business with its net earnings or capital. Therefore, whatever will hinder increase of net earnings or investments by business will hinder increased buying of durable goods and thereby hinder increase of production. Increased taxation of business, and of persons with large incomes, will obviously tend to reduce the net earnings and capital available for investment in durable goods and the incentive to invest in them. Thus, the whole program of "redistribution" is obviously adapted to curtailing the production of the national wealth and income available for distribution.

In spite of all the artificial, and principally government-made, hindrances to increased production and recovery, there is evidence that they are again beginning to occur. Car loadings and steel output recently have shown an upward trend. The need for increased production, especially of durable goods, is enormous and unprecedented. Probably business can make progress in spite of all the handicaps being loaded upon it by government policies. But it is high time that much more emphasis should be placed, in the consideration of all government and business policies, upon the fact that *increased production*, and not redistribution, is the great present problem of every class of the people, wealthy, middle class and poor. The vital issue presented to all is not whether we shall vote for Democrats or Republicans. It is not even the New Deal versus the Constitution. The vital, fundamental issue is that of government and business policies that will cause continued stagnation of production versus government and business policies that will restore production, which is the only useful economic means and purpose of employment and the only source of whatever wealth and income there are or ever will be to distribute.

The depression continues, and millions remain unemployed and on relief, because of continued reduced activity in production. The railroads lack traffic and earnings, and drift toward bankruptcy; hundreds of thousands of their employees remain out of work;

their reduced purchases help cause lagging business and unemployment in the durable goods industries, principally because of lack of normal production in industries of all kinds, and especially in the durable goods industries. Why make a fetish of, and national controversy about, "redistribution," when a substantial increase of production would be far more beneficial to even the poorest classes than any practicable or conceivable revolution of distribution could possibly be?

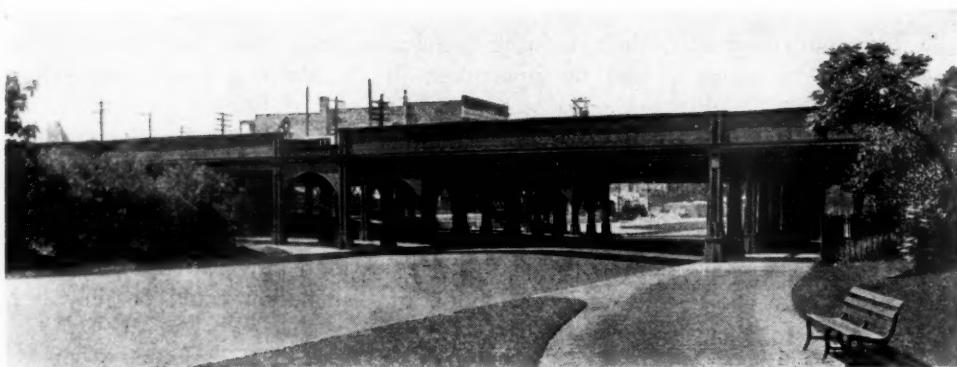
Why Unnecessary Grade Crossings Are Not Closed

According to statistics compiled by the Interstate Commerce Commission 12,370 railway-highway grade crossings were eliminated in the years 1926-33, inclusive, but during that same period 12,514 new grade crossings were placed in service. Thus, in spite of all the agitation for the elimination of crossings and although many billions of dollars have been spent for grade separation, there were 264 more grade crossings at the end of 1933 than at the beginning of 1926.

While there is reason to believe that the corresponding figures for 1934 and 1935, will show a marked change in this trend, this will be due to the pronounced increase in the volume of grade separation work; little progress has been made in resisting the demands for new crossings, on the part of the real estate sub-divider and others, and in overcoming the opposition to the closing of old crossings that function solely as conveniences for small groups of property owners. The key to the difficulty lies in the fact that the very individuals who raise a hue and cry for grade crossing elimination in general can find a dozen reasons why some particular grade crossing should be maintained in service or a certain new one should be provided.

An especially troublesome aspect of this problem, as brought out in the paper by H. E. Surman which is abstracted on another page of this issue, arises from the fact that in too many instances the authority to close crossings rests solely with local officers who are naturally inclined to see eye to eye with the local property holder. As pointed out in Mr. Surman's paper, this situation has been corrected in Illinois by the recent enactment of remedial legislation. Similar action should be taken in other states.

It may be argued that the new crossings opened and the unnecessary old ones that are retained in service are in the vast majority of cases of minor importance, because they handle only an extremely small volume of traffic. It is true, other things being equal, that crossings subject to the heaviest volume of traffic have the worst accident records, but it is equally true that some of the worst accidents have occurred at little used crossings. No crossing that does not serve a real and important public purpose should be allowed to continue as a potential hazard to both rail and highway traffic.



A Structure in One of the Earlier Grade Separation Projects in Illinois—Illinois Central Bridge Over the "Midway" at Chicago—Built in 1893 and Replaced by a Reinforced Concrete Viaduct in 1918

Grade Separation— As the Highway Engineer Sees It*

A discussion of some of the more important considerations
affecting the selection and planning of the projects

By H. E. Surman

Engineer of Design, Bureau of Highways, Illinois Department of Public Works and Buildings, Springfield, Ill.

OME measure of the magnitude of the grade crossing problem in Illinois is afforded by the fact that there are about 16,000 places in the state where streets or highways cross steam or electric railways at grade. Since 1926 about 1,400 of these crossings have been protected by some form of automatically operated signals and probably an equal number were similarly protected prior to that year. Just how many grade crossings have been eliminated by the separation of grades is not accurately known. Since 1919 a total of 308 separations have been carried out on the state highway system, and it is estimated that grade separation work has been done under various auspices at some 2,000 other crossings in the state. A great many of these are in Chicago, where track elevation work has been in progress since the early nineties.

There is, of course, no hope of an eventual separation of the grades at all of the crossings, as this would entail the expenditure of an amount of money so large as to be out of all reason. Most of the crossings must remain at grade indefinitely, with such protection in the form of signals or fixed signs as the local conditions warrant. In the meantime, projects for grade separation will be carried out as opportunity affords, and the State of Illinois has taken an outstanding position in the allotment to such projects of funds made available by the federal government during the last two years. Agreements entered into with the railroads provide for 111 separations (of which 90 have been completed or are now under contract) involving a total outlay of about \$10,000,000. Of this amount \$5,000,000 was from the state's allotment under Sec. 204 (Title II) of the National Recovery Act, \$2,000,000 under Sec. 203, and \$3,000,000 from the state's share of the supplemental appropriation embodied in the Hayden-Cartwright Act.

In addition, federal funds were applied also for the installation of flashing-light signals at 275 crossings and of reflex-button cross-buck signs at 350 other crossings. Plans have been made for continuing the program with such funds as are made available under the terms of the unemployment relief act recently signed by the President.

Attention is directed to the fact that the appropriations provided under Section 204 of the NRA and by the Hayden-Cartwright Act were for work on the U. S. highway system, with provision for the utilization of portions of the funds allotted to the states in decreasing the hazards to highway traffic. However, in those states in which the legislatures had enacted laws specifying a fixed division of the cost of grade separation work between the railways and the state and/or the municipalities, serious questions arose as to the authority of the state highway commission to allot more than its share (as specified by the statute) of the cost of the separation. However, in Illinois, the Division of the Highways has not been hampered by such statutory limitation.

It is necessary to bear in mind however, that progress in the elimination of grade crossings is not necessarily confined to what can be accomplished by the separation of grades. Attention has been called frequently to the opportunity for a reduction in the hazard by the closing of unnecessary crossings or the vacation of little used streets or highways. But the opportunity for the public highway authorities in this direction lies primarily in the location of new roads, or the relocation of old highways that are to be paved, so as to avoid grade crossings. For example, when Illinois State Highway No. 4 was paved between Joliet and Springfield, within which distance it crossed the tracks of the Alton 30 times, relocations parallel with the railroad were effective in eliminating all but two of these crossings. This is true in so far as it concerns the users of the through route.

* Abstract of a talk before the Western Society of Engineers, Chicago.

as most of the old crossings are still open, although their use is now confined to local traffic.

In this connection it is well to direct attention to the fact that while the Division of Highways can take traffic away from a grade crossing by diverting it to another route, it has no authority to close or vacate a highway. This authority should rest properly with the commerce commission of the state, but in a decision of the Illinois Supreme Court rendered in October, 1933, it was held that such authority rests exclusively with the township or the municipality. This decision was the result of litigation following an effort of the Illinois Commerce Commission to close a crossing in a case where the local authority refused to vacate the street involved. Remedial legislation is pending,[†] but until its enactment few crossings will be closed because of the opposition of interested property holders.

Various arguments are offered in justifying the demand for a grade separation. However, in the opinion of the writer, the most important considerations to be taken into account are the following:

- (1) The volume of traffic on both the railway and the highway or street.
- (2) The amount of time lost by users of the highway due to the presence of standing or moving trains on the tracks at the crossing.
- (3) The speed of the traffic on both the railway and the highway.
- (4) The effect of local topography on the relative hazard of the crossing.

Various efforts have been made to give some weight to the accident record with the thought that crossings that have been the scene of frequent accidents should be designated as "dangerous" and receive prior consideration in grade separation programs. However, a study of the circumstances attending accidents shows that heedlessness, inattention or partial incapacity of the vehicle driver has been the primary contributing cause in most cases. Many accidents have occurred in day light where there is no obstruction to the view. As a result, the accident record of the individual crossing is largely a matter of chance and, the collisions do not occur with sufficient frequency to permit of a mathematical determination of the relative probability of accidents at different crossings.

While the four criteria given above afford the basis for a valid conclusion as to the relative desirability or need of grade crossing elimination, it does not necessarily follow that grade separation will be found practicable in all cases considered. The physical conditions at the site may be such that the cost will be excessive. An unusually expensive structure or heavy grading may be necessary, it may involve the acquisition of additional right-of-way where land values are high, or lead to heavy claims for property damage. It therefore happens not infrequently that a study of the conditions at a crossing presenting the prospect of a large expenditure will lead to the conclusion that the same amount of money might better be spent in the separation of grades at not one but several other crossings where the obstacles to construction are less formidable.

Another consideration that must not be overlooked in studying the requirements for a grade separation is the effect of the project on plans for the subsequent elimination of adjacent grade crossings on the same railway. Thus, in the cities of a prairie state it is usually cheaper to separate an individual street crossing by carrying it

over the tracks on a viaduct, but in a program for general grade separation it is more economical to elevate the tracks. Consequently, the separation of a single crossing in advance of track elevation imposes the choice of providing a viaduct, the investment in which will be lost when the larger project is undertaken, or of constructing a depressed subway, the total value of which will not be lost when the track elevation project is completed later. Furthermore, a viaduct will give rise to claims for property damage far in excess of those introduced by the track elevation project. This phase of the problem assumes primary importance in connection with urban grade separation; it is not ordinarily encountered in studies for the elimination of a grade crossing outside of cities.

Observations of the effect on traffic of grade separations constructed in the past, disclose defects of location and design that must be avoided in the development of plans for current projects. For example, efforts to reduce the angle of skew and therefore the cost of the structures have often led to the introduction of sharp reverse curves in the highways, and these, aggravated in some cases by sharp dips in the grade line and lack of sufficient sight distance, have produced conditions of hazard scarcely less severe than those imposed by the grade crossings that were eliminated. Curvature in the highway, both horizontal and vertical must be planned so as to insure a minimum sight distance of 500 ft. within cities and 800 ft. in rural sections.

Another unfortunate feature of many of the earlier subway structures is the presence of piers or bents in the center of the roadway that were introduced for the purpose of reducing the cost of the superstructure or to avoid the use of through girders that would have required a spreading of the tracks. Introduced at a time when highway traffic proceeded at moderate velocity, this type of construction has become a serious menace to safety with the increasing speed of travel on roads and streets. The situation is directly parallel with that presented in the more recent practice of placing flashing-light signals in the center of the roadway. While these obstructions were formerly no more than an inconvenience, under present conditions they are a serious source of hazard to highway traffic. There are situations—for example, the crossing of a wide highway on a sharp skew—where the design of a clear span structure presents an exceedingly formidable problem for the designer, but in my opinion an additional expenditure of \$20,000 or even \$30,000 would be warranted to avoid intermediate supports for a subway structure designed for six traffic lanes or less. For narrow subway structures designed with center parkway or wide structures designed for eight or more traffic lanes there is no serious objection to the use of a center pier. In such cases, there is not only a considerable saving in cost, but the resultant structure will be much more pleasing in appearance.

Negotiations with representatives of the railways concerning the plans for grade separation structures disclose a wide diversity of views as to the requisites of good practice in design. Some railways insist on mass concrete construction in abutments, with the result that the yardage of concrete is greatly in excess of that required for reinforced concrete work designed by the engineers of other railways. Some railways insist on overhead clearances considerably in excess of those that are deemed adequate by other roads. In some cases it is insisted that the back filling behind abutments shall be entirely of sand, gravel, or other readily compacted material at a considerable increase in cost over the expense of using material that is available at the site. Some rail-

[†] Acts recently passed by the legislature clothe the Illinois Commerce Commission with authority to order the closing of grade crossings under certain conditions.

roads have been rather generous in the past in asking that subway structures be designed for additional tracks that do not now exist. The Illinois Division of Highways has taken the position with reference to past federal programs that inasmuch as a subway does not restrict the future expansion of the railroad, such structures should be designed for existing tracks only unless some of the existing tracks can be shortened or abandoned. On overhead projects, however, future railroad expansion is limited to the confines of the structure and in such cases a reasonable number of additional tracks are permitted. This will be the policy with reference to future federal grade separation projects. In the interest of fairness, the state authorities are compelled to take the position that the elements of the structure provided at the crossings of one railway must be no more costly than those provided for the others where conditions are similar.

The foregoing has related to what might be termed the practical considerations. But there is another side to the subject that should not be overlooked, namely, the appearance of the structures. Too often in the past the designer has given no thought to the attractiveness of the structure or has endeavored to meet the requirements of esthetics by means of crude or meaningless ornamentation.

The attainment of a pleasing result is not a mere matter of "dressing up" the completed design. Rather it involves the proportions of the structure as a whole, good workmanship in surface treatment and an effort to harmonize the structure with its surroundings. The subject is worthy of a great deal more attention than it has received in the past.

products, ore, and coke showed increases over last year. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading			
	For Week Ended Saturday, July 27		
Districts	1935	1934	1933
Eastern	130,875	130,513	148,331
Allegheny	116,893	113,255	135,133
Pocahontas	43,433	42,861	50,211
Southern	79,431	80,348	90,042
Northwestern	88,912	95,701	88,427
Central Western	89,040	97,302	86,658
Southwestern	47,878	50,062	46,037
Total Western Districts	225,830	243,065	221,122
Total All Roads	596,462	610,042	644,839
Commodities			
Grain and Grain Products	33,351	43,627	33,529
Live Stock	9,672	26,295	15,080
Coal	102,934	101,670	129,773
Coke	4,581	4,528	6,810
Forest Products	28,668	21,713	28,017
Ore	34,013	30,803	28,282
Merchandise L.C.L.	156,337	158,514	172,872
Miscellaneous	226,906	222,892	230,476
July 27	596,462	610,042	644,839
July 20	593,366	616,040	656,380
July 13	566,488	604,192	653,661
July 6	472,421	520,741	543,510
June 29	618,036	646,003	641,730
Cumulative Total, 30 weeks	17,404,794	17,787,638	15,842,690

Car Loading in Canada

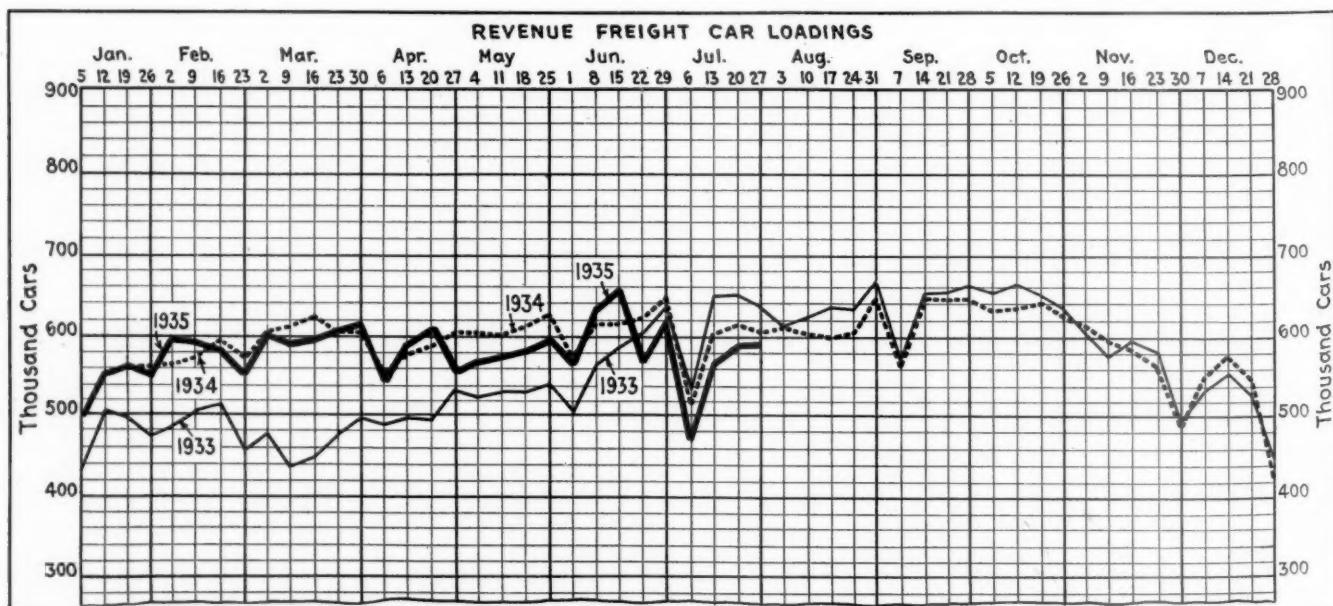
Car loadings in Canada for the week ended July 27 totaled 43,342 cars, 1,952 cars less than the total of 45,294 cars for the previous week, and 389 cars less than that of 43,731 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

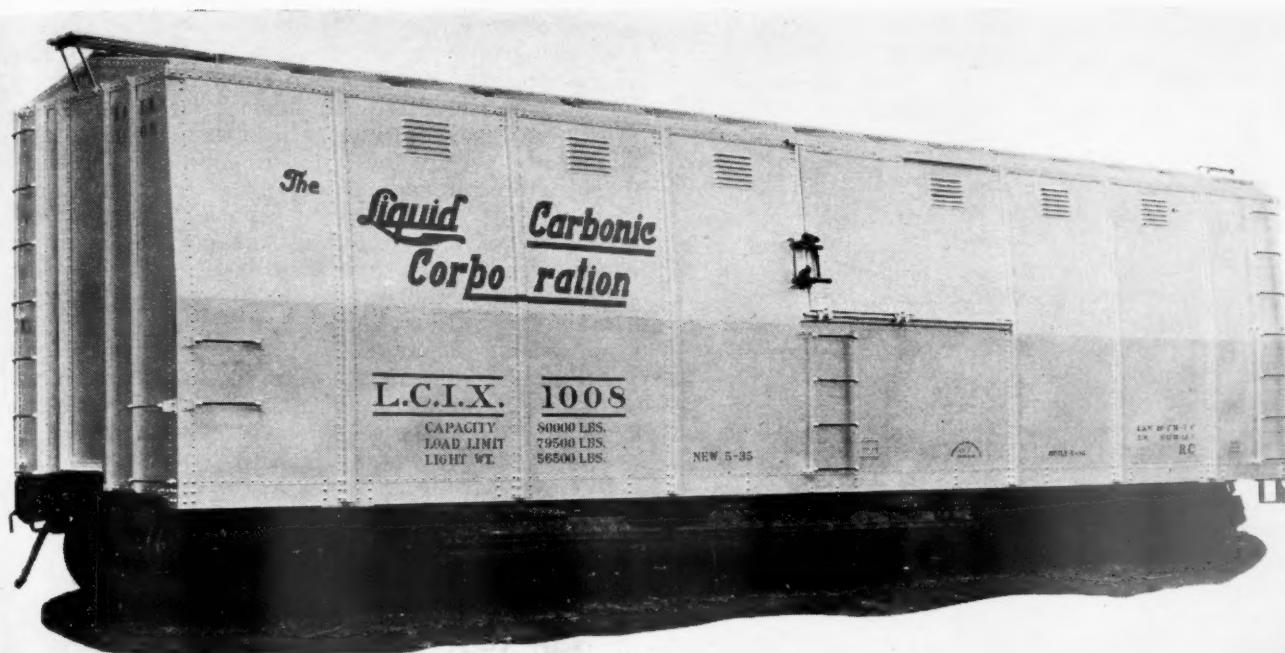
	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
July 27, 1935	43,342	18,458
July 20, 1935	45,294	19,364
July 13, 1935	45,668	17,159
July 28, 1934	43,731	18,942
Cumulative Totals for Canada:		
July 27, 1935	1,288,124	654,002
July 28, 1934	1,268,632	679,497
July 29, 1933	1,057,112	538,344

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 27 totaled 596,462 cars, an increase of 3,096 cars as compared with the week before but a reduction of 13,580 cars as compared with the corresponding week of last year and of 48,377 cars as compared with 1933. Coal, forest products and ore showed increases over the preceding week, and miscellaneous freight, coal, forest





Special Insulated Car—A.A.R. Class RC—Built by the American Car and Foundry Company for Transporting Dry Ice

Insulated Cars for Shipment of Dry Ice

Unusual design developed for rapid loading and for transportation with minimum loss in transit

Five insulated freight cars of the A.A.R. Class RC, which were especially designed for the rapid loading and distribution of dry ice, have recently been built by the American Car and Foundry Company for the Liquid Carbonic Corporation, Chicago.

In designing these cars the following objectives were kept in mind: A maximum capacity or loading space, convenience and rapidity in loading and unloading, and the provision of an unusual amount of insulation to reduce to a minimum the evaporation of the dry ice during the period of distribution. They are 45 ft. long and of steel construction throughout. The entire bottom half consists of a solid bed of insulation surrounding the steel bins provided to hold the dry ice. Up to a height of 8 ft. above the rail the width is 10 ft. 8 in. From this point the sides are tapered in to a width of 8 ft. 11 in. at the eaves which are 13 ft. 3 in. above the rail. This tapered form gives the cars a rather unusual appearance. From the dimensions given it will be noted that the width at the side sills is greater than that of a normal box car, while the height is also somewhat greater. These dimensions were adopted in order to provide maximum lading and insulation for the container bins, sufficient inside headroom for the men engaged in loading and unloading, and at the same time to provide adequate clearance for tunnels and other outside construction.

The nominal capacity of the cars is 80,000 lb. As the light weight is 56,500 lb. and the trucks have 5-in by 9-in. journals, the load limit is 79,500 lb. The actual loads will be approximately 30 tons, the bins being designed to hold 1,100 cakes of dry ice of 55 lb. each.

The insulated sides are provided with ventilating

louvers near the eaves. The central side doors are of the sliding type and extend only half-way down the sides instead of to the floor and side sills as in the ordinary box-car construction.

The insulated bottom half of the cars contains a series



Interior View of Car Showing Bins and Conveyors for Handling Cakes

of eight bins, extending all the way across the car. These bins are set in pairs, each pair being insulated against the next pair. The sides, ends and floors of the cars have 14 in. of insulation, thus making the bed for the bins practically solid. The materials employed are cork and balsam wool for the insulation and fir wood sheathing for the outside of the steel bins. By an ingenious system of construction these layers are made seamless by pitch filling and cementing of the slabs and layers. The tops of the bins are open, but when in service are covered by an 8-in. flexible blanket of kapok which supplies ample top insulation.

The bins are constructed to receive a certain number of 55-lb. blocks of dry ice and hold the blocks snugly against one another, thus preventing damage and loss from vibration or rubbing in transit. By arranging the bins in pairs with insulation between pairs it is possible to obtain the maximum insulation for the ice at all times, whether the bins are full or only partly filled.

Loading is done by means of roller type conveyors. Permanent distributing conveyors are built into the cars, across the tops of the bins, with an open space in the center for attachment to outside conveyors at the shipping points. As there are doors on both sides of the cars, they may be loaded from the two sides at once, thus permitting the operation of loading to be performed quickly. Sills placed over the insulation serve as running boards and provide ample footing for the loaders.

Dry ice, which is solid carbon-dioxide, is made by first expanding liquid CO₂ and then compressing the resulting "snow" into solid blocks. Before loading each block is enclosed in a sealed manilla bag. Dry ice has a temperature of minus 109.6 deg. F. It evaporates without melting and forms a harmless gas. As a consequence, there is no necessity to make provision for drainage as is required with water ice which melts and turns into a liquid.

The increasing use of dry ice for refrigerating purposes in shipping fresh fish, meats, vegetables, etc., by rail and truck, as well as its use for commercial purposes, has made advisable the development of the new type of car described. These cars will transport dry ice from manufacturing to distributing points with relatively small losses. Furthermore, they will carry some five times as much ice as has been possible hitherto when it was moved in box cars of the usual design.

Eastman Reorganizes for Results

WASHINGTON, D. C.

CO-ORDINATOR EASTMAN on August 5 announced a number of changes in his staff, made partly because of vacancies created in certain positions and partly because of changes in the character of the work planned for the current year. "During the two years following the appointment of the Co-ordinator," Mr. Eastman said, "it was necessary to spend a great part of the time on research, in exploring the possibilities for the elimination of waste in railroad operation through greater co-operation and co-ordination of effort and by modernization of equipment, service and rates. A vast amount of information not hitherto available has been developed.

"The opportunities for profitable research have by no means been exhausted, but during the current year it will be the primary purpose to promote positive results from the work already done. Based on their research, the staff of the Co-ordinator have made many recommendations for improvements covering a very wide field.

Even if there were general agreement on their soundness and practicability, it would take a long time to carry all of these recommendations into effect. The opportunity for comparatively early accomplishment is much more promising in some cases than in others. Without abandoning any part of the program, it will be the aim of the Co-ordinator and his staff to start action through as many entering wedges as possible. Attention will, therefore, be concentrated on the plans and projects which offer the most immediate hope along these lines.

"Every effort will be made to co-operate and work in harmony, so far as reasonably possible, with the Regional Co-ordinating Committees and the Association of American Railroads, but contact will be maintained, also, with the individual railroads and particularly with those managements which appear to be most enterprising and progressive. The object will be to get results, without preoccupation with the credit for the results. Nor will there be slavish devotion to particular methods. It is realized that step-by-step progress in the solution of certain of the problems may be necessary."

Both Mr. Eastman and the railroads are hopeful of being able to accomplish something in the way of economies by co-ordination now that there is some leeway in the restrictions against reducing the number of men employed. The emergency act protects the status of individual employees in service in May, 1933, but in providing that the number in service in that month shall not be reduced it allows for a deduction of not to exceed 5 per cent a year for normal retirements so that the number which must be maintained is now about 100,000 less than the number in service in May, 1933.

The Section of Purchases will be given a broader field of activity, and its name will be changed to the Section of Property and Equipment. It will continue under the direction of R. L. Lockwood. In addition to the work which that section has heretofore carried on, directed toward the better handling of purchases, stores and scrap, and progress in a standardization, simplified practice and central scientific research, it has been given the duty of concentrating on the "container problem," and also on the better utilization of shops and shop equipment.

By the "container problem" is meant the securing of equipment, interchangeable in use between all railroads and trucks and water lines as well, which will meet the needs of modern commerce for convenient and speedy transportation of lots intermediate between package freight and carloads, providing complete door-to-door service at the equivalent of carload rates or rates near that level. Attention will be given primarily to the needs and desires of shippers and consignees, and then to the best means of meeting those needs and desires. The problem involves not only the matter of equipment design but also questions relating to service and rates and to co-ordination of rail and truck operation. Mr. Lockwood will have the help of other sections of the Co-ordinator's staff in this work, and also in his work on the utilization of shops and their equipment.

In the Section of Transportation Service, the work will be divided between two co-directors, who will be in charge of separate matters but will at the same time consult and work together. One of these co-directors will be John C. Emery and the other will be Joseph L. White. Mr. Emery will deal primarily with matters relating to passenger and merchandise traffic, and Mr. White with matters relating to freight carload traffic, but the division of responsibility may be modified as occasion demands. These men have general knowledge and experience which qualifies them to deal with the matters which they will have in hand, but they will be given special assistance on technical phases. It will be their duty to locate the best opportunities for ini-

tiating action along the lines already recommended in reports of the Section, and to promote such action.

The Co-ordinator's executive and traffic assistant, C. E. Bell, will be given more help in following up the opportunities for increasing railroad revenue in connection with various accessory services (one of the specified purposes of the emergency act), including port terminal charges and practices. Together with the regional traffic assistants, he has already done much of the necessary pioneering and ploughing of ground, but these matters have proved to be full of complications, and he has been handicapped by lack of adequate assistance in running down the many details involved. To a greater extent this work will be concentrated at Washington, but C. E. Hochstedler, with headquarters at Chicago, will be his principal assistant.

The Section of Regional Co-ordination, in charge of V. V. Boatner, will continue as at present organized, but now that most of the studies of the many opportunities for terminal unification throughout the country has been completed, it will be the primary duty of this section

with office at Chicago. From 1922 to 1926 he was an associate editor and from 1926 to 1934 motor transport editor. He was born at Kansas City, Mo., on July 19, 1902, and entered railroad service in 1917 as tonnage clerk for the Chicago & Alton. In the following year he became yard clerk and in 1919 and 1920 was a ticket seller for the Kansas City Terminal. From 1920 to 1922 he attended the University of Wisconsin and for a time he was reservation clerk for the Canadian Pacific Lines.

Joseph L. White for over a year has been assistant to the director of the Division of Transportation Loans, Federal Emergency Administration of Public Works, and formerly was vice-president of the Irving Investors Management Company, Inc., of New York. Mr. White was born at Ithaca, N. Y., on September 2, 1884, and after attending Cornell University for a year was graduated from Harvard in 1906. He entered railroad service in 1906 and held various positions in the engineering, operating, purchasing, and executive departments of the Grand Trunk and the Wabash. From 1914 to 1915 he



(e) Harris & Ewing
John C. Emery



(e) Bachrach
Joseph L. White



N. D. Ballantine

to promote actual tests of such unification at typical points in each region.

N. D. Ballantine, heretofore assistant director, has been promoted to the position of director of the Section of Car Pooling, made vacant by the resignation of O. C. Castle, but pending information as to the actual results of the new plan of per diem payments adopted by the Association of American Railroads to reduce empty car mileage, car pool plans will not be pushed. In the meantime Mr. Ballantine will be able to lend assistance to the Section of Property and Equipment and the Section of Transportation Service.

J. R. Turney, formerly director of the Section of Transportation Service, but now engaged in the practice of law, will assist the Co-ordinator and his staff in an advisory capacity on matters covered by the reports which he rendered as director of the Section. Other branches of the Co-ordinator's work will continue without substantial change.

"In all of the Co-ordinator's work," Mr. Eastman added, "it is hardly necessary to state that all obligations imposed by the emergency act with respect to railroad labor will be faithfully observed."

John C. Emery, who has been appointed co-director of the Section of Transportation Service, has been connected with the *Railway Age* since 1922, after several years of experience in railroad service. For the past year he has been manager of the business survey department of the Simmons-Boardman Publishing Company,

was assistant to the president of the Chicago, Indianapolis & Louisville, and from 1915 to 1917 was operating statistician of the Union Pacific system. From 1918 to 1922 he held various positions in the United States Railroad Administration, including those of assistant manager of the operating statistics section, statistician to the director general, and assistant comptroller. He was later statistician of the Joint New England Railroad Committee, on the staff of the comptroller of the Allied Chemical & Dye Corporation, in charge of research of the Irving Investors Management Company, and in 1929 he became vice-president of that company. He is the author of "Analysis of Railroad Operations," and various articles on accounting published in *Railway Age*.

N. D. Ballantine, who has been assistant director of the Car Pooling Section, is one of the outstanding students of the subject of car pooling. He was born in Booneville, Mo., in 1872 and began his railroad career as a telegraph operator on the Kansas City, Fort Scott & Memphis. He was superintendent of transportation of the Kansas City Southern and assistant to the operating vice-president of the Chicago, Rock Island & Pacific. He served the A.E.F. in France as general superintendent of transportation and was assistant manager of the Car Service Division of the Railroad Administration in Washington for a year. He then became superintendent of transportation of the Union Pacific and later assistant to the president of the Seaboard Air Line. In recent years he has been a transportation consultant.

Reorganization of Traffic Departments Recommended

Greater co-ordination and research and
more advertising urged

A REPORT on "Railway Traffic Organization," the last of a series of reports prepared by Coordinator Eastman's Section of Transportation Service under the direction of J. R. Turney, director, asserting the need for a thorough reorganization of the functions, methods, and personnel of the railway traffic departments, has been transmitted to the Regional Co-ordinating Committees of the railroads for their consideration. In his letter of transmittal Mr. Eastman expressed the belief that if the report is studied with care every railroad will find in it much that will prove of considerable value to it individually but he particularly called attention to suggestions in the report regarding co-operative action in the rate-making activities of the carriers, a subject also emphasized in the section's "Freight Traffic Report." "I have in mind no definite form which this co-operation should take," he said, "but I hope that the carriers will give serious consideration to the problem. A further field for co-operation lies in advertising, and in the co-ordination of on-line and off-line agencies. One way by which this might be accomplished is pointed out in the report. Doubtless other methods will occur to the carriers."

The report concludes with the following: "The railway traffic department, to meet the new conditions which have arisen and the grave responsibilities which rest upon it, is in need of thoroughly reorganized functions, methods, and personnel. This reorganization cannot be accomplished overnight, but will require years, perhaps a generation, for its accomplishment. Generally it appears that it should assume the following form: The pricing functions should be systematized and committed to a single agency. The sales functions should be integrated into a limited number of carrier groups. Selling should be planned and directed by the central staff, rather than left to the salesman's self-activation. Sales efforts should be generally supplemented by a thorough and continuous advertising program. Employee standards should be raised by use of a modern personnel program, and employees and officers should be constantly informed about the carriers, about their patrons, particularly the business of the latter, and should be given technical and professional training and education. Employees' progress should be examined periodically, to eliminate the unfit early in their employment and to assist, by education and direction, the fit to become more valuable to the carrier and to themselves."

In addition to a voluminous statistical appendix there is attached to the report a "Professional View of Railroad Advertising," in the form of comments by a special committee of the American Association of Advertising Agencies.

The report is based largely upon responses by the Class I railways to an inquiry concerning the organization, administration, functioning and effectiveness of freight traffic pricing and sales efforts. Certain supplementary statistics of office and advertising expenses of passenger traffic departments, not available in time for

incorporation in the Passenger Traffic Report, are also included.

"As apparent from its nature," Mr. Turney said, "the chief value of the survey lies in the opportunity afforded the individual carrier to review objectively its own organization and personnel, and we understand that some carriers have been able to utilize the information elicited by the inquiry to good advantage. It is hoped that the report will make such individual study still more valuable, by presenting a composite picture with which individual performance may be compared, as well as by pointing out certain very general conclusions, many of which are largely self-evident.

"Acknowledgment is made for the hearty and efficient co-operation of the traffic and accounting officers of the carriers in obtaining and assembling the underlying data, and also to a special committee of the American Association of Advertising Agencies, for valued assistance in organizing the advertising data."

Following are some extracts from the report:

New Responsibilities On Traffic Departments

New methods of transportation are daily making clearer the fact that in the immediate future railway thought and genius must be concentrated on the traffic problem, if the industry is to perform the service which the nation's welfare requires. In each of the three preceding surveys, it became evident that not only had the advent of new agencies brought about need for improvement in railway operating facilities and methods, but that it indicated a thorough revamping of pricing, selling and servicing. In the agitation, which resulted in the effective regulation and control of railroads about thirty years ago, the emphasis was largely upon the need for public protection. In the present agitation for public regulation of other carriers, the emphasis is upon the need to prevent destructive competition, which threatens to disable transportation agencies from efficiently handling the nation's commerce.

The changed conditions have placed the new and vital responsibility upon the traffic department to design a system of prices, which will attract business and at the same time prove profitable, and to effectively sell their service. Recovery, however, can only be attained by their effort. The idea that any form of public or exterior action, short of a subsidy, will resuscitate the railways is illusory, to say the least.

In view of the gravity of the added responsibility, it is fitting that the structure and personnel as well as the methods and routines now employed by the traffic departments should be examined critically, to reveal what if any changes therein are indicated by the new conditions.

Organization

There are about 150 Class I railways, which reduce to about 100 separate and distinct systems, and a like number of separate, and in large measure confronting, traffic departments. Omitting consideration of joint pricing activities, these departments are so many little principalities, insofar as functioning is concerned. Hardly any other result could have been expected when one considers the conditions under which they have been developed. It has been the policy of lawmakers and regulatory bodies, at least until the very recent past, to discourage if not to prohibit co-operation in traffic activities. These departments were cre-

ated in a period of intensive competition among railroads, and were developed in an atmosphere which permitted little co-operation, in which no quarter was asked nor given. To say that co-operation is now required implies no criticism of the past policy of autonomous traffic departments or of those responsible for it, any more than a suggestion to use an air force or a motorized artillery is a criticism of Forrest for using horses, or of Hannibal for using elephants. The fact remains that under present circumstances the evils which beset the railway industry are due in no small part to the existence of these hundred or more confronting organizations.

About 17,000 Traffic Department Employees in 1933

In 1933 there were not quite 17,000 employees in the freight traffic departments of the reporting carriers, of which 18 per cent were in the administrative sub-department (including research and industrial development), 22 per cent in the rate department, and 60 per cent in the sales department (including specific traffics, car tracing and advertising). The total expense of the department was 55 million dollars, of which the administrative sub-department was charged with 24 per cent, the rate department with 26 per cent, and the sales sub-department with 50 per cent.

The outstanding feature of traffic department expenditures is the relatively large amount of time and money required in the discharge of administrative duties. The cost of administration, nearly 12 million dollars, constituted about 24 per cent of all traffic expense in 1933. This relatively large proportion is due primarily to two things: (1) The number of agencies handling the same problem, requiring a large amount of routine correspondence; and (2) the functional type of organization, requiring constant correlation between the several sub-departments. It is sufficient to point out at this time that both root in the same basic cause—the multiplication of traffic departments and activities, since with an integration of the pricing functions in a common agency, the necessity for much of the intradepartment correspondence would disappear.

The relative increase in importance of the traffic department's functions, in the recent past, lends emphasis to the need for traffic research and development. To devise a rate structure which will attract the largest volume of profitable traffic, it is essential that the traffic department have information, not merely with respect to the present areas of production and markets of processing or consumption, but also with respect to the potentialities of other producing areas or consumption markets. To evaluate these potentialities adequately, it is necessary that a reasonably thorough knowledge be obtained of the economic and business influences which surround the more important traffics.

The need for research in connection with rates and service is also pressing. At the present time the direction of sales effort by the central office is impossible because of a lack of information as to the sources of traffic, present and potential. In the location of their sales agencies and in the testing of their production after establishment, the carriers are without the information deemed essential by all modern sales organizations.

Where experimental bureaus have been established there is indication that they have been able to assemble information more economically as well as more fully than under the usual program of throwing the burden of such work upon the shoulders of a staff already heavily burdened and so decentralized that no uniform results can be obtained, and often with much duplication in effort.

Traffic research by individual railroads, so far as data are available, has proved profitable. For obvious reasons, however, no one railroad can collect all the information necessary. It is believed that the creation of an aggressive and competent joint traffic development agency, devoted to the market research, traffic and industrial development, for the railroads as a whole, would not only repay the carriers many times over, but would prove of great value to industry and to the country as a whole.

Co-ordinated Pricing

The pricing problem which the traffic departments must face and solve is exceedingly complex, involving as it does the proper evaluation of a number of variables, which will directly affect the carrier revenue upon the one hand, and the necessity to comply with a number of statutory or regulatory requirements upon the other. Roughly, there are about 5,000 different commodi-

ties which move in carload lots and for which rates must be provided. There are over 34,000 cities and towns in the United States at which freight stations are maintained and to and from which rates must be published. There are over 100 separate traffic managements, between many of which joint rates for intercarrier movements must be negotiated. This statement, however, falls far short of revealing the whole picture. The markets of production and consumption, for many of the more important commodities, must be appraised, in order to determine the volume of traffic which can be obtained, the rates which the shipper will pay, as well as those which the carrier can afford to accept. This latter element, of course, brings into full play the strife of competing producers or consumers of the same commodity or competing commodities. With the development of the new modes of transport, the problem has been further complicated by the need to relate prices to costs—those of the competing as well as the rail agency. All these causes have combined to make necessary an increasingly high degree of ability and intelligence in solving this major problem.

As has been shown in the Freight Traffic Report, the extent of interterritorial exchange of traffic compels a nationwide attitude toward pricing. The very duplication of effort, which the regional pricing activity was designed to avoid, has become a real duplication, because of the tendency toward a national traffic flow. The studies of regional rates reveal that, despite regional treatment, pricing tends to produce a similarity in net revenue per ton-mile. In spite of different theories of pricing within the various ratemaking groups, the prevailingly interterritorial flow of business compels modification of the theories, and we arrive at national prices. The growth of interterritorial contact or joint conference rate committees is eloquent testimony of the necessity for a wider outlook on the part of ratemaking bureaus.

The multiplicity of pricing agencies is expensive to the individual carrier, which supports a large individual pricing staff and contributes to these joint associations as well. The expense might well be borne if this decentralization were beneficial in fact. The present situation demands prompter and simpler pricing. Industry needs stability in the rate structure. Railroad pricing officers should have relief from the overwhelming pressure for rate reductions—only a portion of which are justified.

Fixing Responsibility for Revenue

One of the inherent defects in a functional type of traffic organization is its inability to fix the responsibility for carrier revenue. The assignment to one set of men of the general duty to obtain routings of all traffics, and of the parallel duty to another set of men to make rates for all traffics puts it wellnigh out of the question to correlate the two functions, with respect to any given traffic. The result is that the solicitation sub-department must get cars whether their movement will produce profit or not, and the rate sub-department must provide rates regardless of their traffic attractiveness. Responsibility for the revenue of the carrier as a whole may be fixed upon the chief traffic officer, but there the assignment must stop, since it is generally an impossibility to ascertain, except in the most general way, the source of an increase or decrease in revenues.

The commodity type of organization has marked advantages in this respect, since it enables the chief traffic officer to fix definitely responsibility for good or poor results, also enables mal-adjustments to be discovered and remedied, and is of immense advantage in promoting understanding and businesslike relations between shippers and carriers.

The ultimate remedy, however, would appear to lie in a wholly different direction. The objectives in pricing are (1) maximum revenue to carriers, (2) encouragement of commerce, (3) industrial stability, and (4) flexibility to enable progress. Present pricing practices accomplish none of the individual objectives, because decentralized activity leads to (1) pricing without regard to volume of traffic, (2) pricing advantages to those who can force, (3) pricing without a continuity of policy, and (4) pricing based on compromise.

If the law should be amended to make such action possible, the logical answer to the problem would seem to lie in a central carrier agency in which each carrier vests its rate-making functions, and at the same time imposes full responsibility for an adequate revenue. This agency would be wholly independent, would possess plenary power, insofar as carrier action is concerned,

and of course would constitute the sole tariff publishing agency. Its staff should be carefully chosen and trained and should maintain adequate (and independent) research agencies enabling it at all times to be in close contact with shippers and commercial conditions. Such an agency would greatly stabilize and simplify rates, and materially reduce the present expense of pricing.

It is too much perhaps to hope that such a centralization of the pricing function could come at once. It is not too much to urge that immediate consideration be given to integrating the many present rate bureaus. This may be done gradually, by providing definite and expedited procedure for handling interterritorial matters, by consolidating rate bureaus at least in the three districts and the classification bureaus, and by assigning immediately to national bureaus those commodities in which the interdistrict movement predominates. Much lost motion and complexity and prolixity in tariffs, to say nothing of expense, can be avoided by appointing a single national agency to publish tariffs. All these things can be done without any change in existing law, and without any sacrifice, real or apparent, in the independence of any carrier.

Selling

A most important phase of the problem is the method of shipper contact. Data were furnished by the railroads with respect to five classes of shippers: (1) The l.c.l. shipper; (2) the shipper of less than 6 cars per year, "transient shipper"; (3) the shipper of from 6 to 100 cars per year, "average shipper"; (4) the shipper of from 100 to 500 cars per year, "large shipper"; and (5) the shipper of over 500 cars per year, "multi-car shipper." As stated above, the l.c.l. business shipper group probably numbers about 100,000 and is largely duplicated in the carload groups. If we assume that the commercial shippers are embraced in the last three groups, based on the relationship of the shippers reported, there are about 5,000 multi-car shippers, 11,000 large shippers, 84,000 average shippers, and 115,000 transient shippers in the United States.

Analyzing the reports of the carrier agencies, we find that the multi-car shippers, constituting but 2 per cent of the shippers in number, are responsible for 47 per cent of the cars; the large shippers, constituting 5 per cent of the shippers in number, are responsible for 23 per cent of the cars; average shippers, constituting 39 per cent in number, are responsible for 26 per cent of cars; and transient shippers, constituting 54 per cent in number, are responsible for only 4 per cent of the traffic.

This story is better told in terms of sales cost per car. The total sales cost was 27½ million dollars, or \$1.44 per car originated. Thirty-six per cent of the calls were made upon the transient shipper group (4 per cent of cars) at a cost (apportioned upon a call basis) of not quite 10 million dollars, which is equal to about \$12 per car originated for this group of shippers.

A further important aspect of the problem is the relatively high concentration of traffic. With about half the total carload traffic routed by about 5,000 shippers, the question arises whether the solicitation and servicing of their traffic should not be separated from the entirely different character of solicitation necessary for smaller shippers, by assigning such solicitation to a central office agency, organized on commodity lines to parallel the business of these shippers.

If legal requirements and the carrier policies be modified, as suggested in the Freight Traffic Report, by voluntary grouping of the carriers into a limited number of through and competing routes, with the gradual closing of alternative routes, the competitive need for off line agencies, from the standpoint of the carriers themselves, would largely disappear. From the shipper's standpoint, however, there must be taken into consideration the fact that under present organization, at least, the average on line agency is not equipped to furnish information with respect to the schedules, terminals, facilities or tariff privileges of connecting railroads, all of which is necessary for adequate shipper servicing. While off line agencies as such would be made unnecessary by the routing arrangement above described, a large part of their personnel would have to be absorbed into the much expanded on line agencies.

The total cost of outside freight agencies of the reporting railways was not quite 24 million dollars, of which 54 per cent was expended for on line agencies, and 46 per cent for off line agencies. The total cost of outside agencies was a little in ex-

cess of 1 per cent of the freight revenues. The on line and off line agencies each cost about ½ of 1 per cent of the total freight revenue.

The cost per car handled as reported by the agencies, including duplications, in the United States, was 29 cents for on line agencies, and 56 cents for off line agencies. The on line agency cost ran from 24 cents in the East to 39 cents in the Southwest, and the off line agency cost from 46 cents in the East to 82 cents in the Southwest. The higher costs of the Southwest railroads is partly explained by the relatively large number of competing systems, each of which must maintain a complete sales force, as well as by the much lower sales volume.

Advertising

In 1933, railroads expended one one-hundredths of one per cent of their freight traffic revenue on advertising freight traffic. The budget for the reporting carriers was \$226,000.

Newspaper advertising accounted for 10 per cent of the direct expenditure, magazines (mostly business and trade publications), 25 per cent; novelties, 15 per cent, and special displays, 8 per cent. The remaining 42 per cent was mainly absorbed by overhead, salaries, etc. Expenditures for posters, maps, radio and direct mail were relatively small.

Eighty-three per cent of the carriers reported that their freight advertising was designed to accomplish a definite end. Prevailing there was an intention to make a market study before placement. Less than half the railroads, however, employed agencies, experienced in commercial work, and only 24 reported that their agency specialized in railway advertising.

Only 22 railroads expressed a disbelief in general freight advertising. The others could not have had a very firm conviction that it is productive. The smallness of the expenditure makes this disbelief more eloquent than the statement of disbelief.

In an earlier connection it is shown that over half the railway patrons provide only 4 per cent of the business, and that this large transit group is constantly shifting from year to year. To reach these shippers, a "shot gun" rather than a "rifle" attack is required, and there is presented an excellent field for a planned, consistent, and continuous advertising campaign, which will supplement direct solicitation efforts, and provide a certain machinery for obtaining information of prospective traffic, in place of relying on "tips," rumor and gossip.

Advertising should supplement, not displace, the solicitor. It has been remarked that 20 years ago the greatest foes of advertising were the salesmen. They saw the printed work and the picture replacing their demonstrations and their personal sales presentation. In the present day, the salesman demands advertising, for it gives his product prestige in addition to utility at a price. That advertising will not displace personal sales efforts is recognized by railway salesmen, as shown by the fact that over 60 per cent of them recommend newspaper, direct mail, rate manual, and similar advertising.

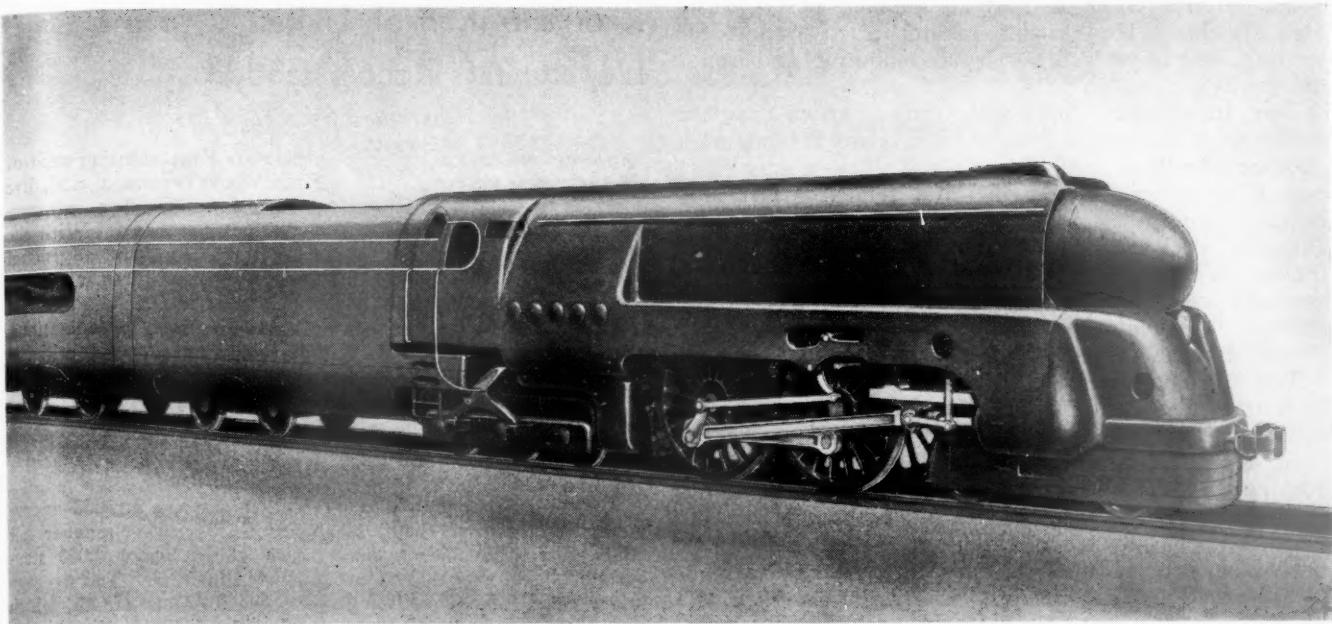
In an era of highway, waterway, and railway transport competition, advertising of quality is the only alternative to direct or indirect rate competition. There are other considerations that gain permanent consumer acceptance besides price. Further, the direct or indirect price competition leads inevitably to the weaker being destroyed at the ultimate detriment to the public. Many of the "truck compelled" rate reductions might have been avoided in part by improved service, coupled with vigorous advertising.

As other studies by this Section indicate, the railways at present possess potential advantages not obtainable from other transport agencies, and if by improvement and modernization they could attain the service efficiency which the studies indicate, an advertising budget of ½ of 1 per cent of their freight revenue would probably be a most remunerative investment.

Sales Co-ordination

In the Freight Traffic Report the suggestion is made that service will be greatly improved and considerable waste eliminated by the voluntary grouping of carriers for definite route channels, which can be accomplished without consolidation, without surrender of individuality of the carriers, and with little or no real pecuniary risk. If something along these general lines were to eventuate, the sales problem would be simplified, the expense reduced, and the effort greatly improved. The present on line and off line agencies, in each city, would be consolidated

(Continued on page 186)



A Streamlined 4-4-6 Light-Weight Passenger Locomotive Design with an Articulated Trailing Truck

Design for High-Speed Locomotive

An industrial designer suggests a treatment of the steam locomotive for light-weight passenger service

By C. Louis Otto*

THE interest in light-weight streamlined trains has not only given railroads the opportunity successfully to compete with other forms of transportation, but it has greatly accelerated their pace of thought and has effected radical changes in their concept of operating practice.

Aside from new experiences in the arts of fabrication and operation, the railroads have made the acquaintance of a new profession, namely that of industrial design. The designer has been given considerable freedom in the styling of coach interiors and other items sufficiently remote from the mechanical intricacies of the equipment. In shaping the exterior shells of Diesel and electric units somewhat less freedom has been allowed, as the designer was working closer to the involved mechanical forms.

Several steam trains have recently been constructed to meet today's requirements of light-weight operation. Since the specifications demand a completely altered type of motive power, there is ample work in store for the designer.

To achieve any great measure of success the designer must blend his work with the mechanical set-up. Little can be done in this direction without the co-operation of the engineer. Even when adhering to conventional or straightforward features of construction, there are usually several choices or compromises that could be cheerfully made by the engineer, which might form the basis for an entirely new outlook for the designer. All too frequently the engineer has his work completed and practically on the road before the designer takes it in

hand, thereby limiting his efforts to a superficial treatment of the subject.

An important factor in the Diesel trains lies in their styling or sales appeal to attract traffic. Their spectacular performance has been impressive. This has intrigued some with the idea of reproducing the same spectacle by means of a short-cut process, namely, wrapping up a standard steam passenger engine in sheet metal. It should be unnecessary to relate that the value of the new Diesels lies much deeper than in being merely spectacular. Spectacles are the result, not the means of improving transportation and its operating costs.

It is logical to assume that steam power must present an appeal of style, and must also save weight to compete with these new units. Obviously the first place to reduce weight is in the coaches themselves. This immediately makes today's large Pacific and Mountain types too heavy for the work, as there is small satisfaction in pulling a train with a locomotive that weighs more than its total cargo.

The locomotive illustrated is offered not in a spirit of prophecy, but rather as a question as to how deep into the chassis the designer may delve in his quest for style and aerodynamic efficiency.

This unit is a modification of the Atlantic type, capable of developing in the vicinity of 2,000 horsepower with the boiler and water tube firebox working at 300 lb. pressure. It is intended to pull a train of light-weight articulated coaches. The front truck of the first car to be non-articulating to permit separate handling of the engine.

Eighty-inch drive wheels are chosen in preference to

* Industrial Designer, New York.

84-in. or larger sizes, as they are capable of sufficiently high speeds. They provide greater tractive force for starting, and allow a lower boiler mounting and center of gravity.

The unorthodox six-wheel trailer articulates the tender with the engine frame. This gives the engine a steadier wheelbase at high speeds and allows a very short overall wheelbase for engine and tender. The side bearings are similar to those on the present six-wheel Pullman truck and face a cross beam of the engine frame. When engine and tender are parted for inspection and overhaul, the truck remains integral with the tender. The center portion of the three-part ash pan slopes down and ahead of the trailer front axle.

The smokebox is of the Bean cast type. This method of construction allows a great variety of shapes to be easily manufactured. This casting incorporates the various steam leads, brackets and the headlight. The round nose keeps the air flow close to the surface and permits smoke lifts to be less awkward and far-flung. In this case the smoke lifts are an extension of the boiler jacket. Both exhaust nozzle and stack are raked back to an angle permitted by the superheater header.

This gives a longer stack without increasing the overall height and makes for a better tieup with the smoke lifts. The jacket stands some distance away from the boiler shell. This encloses the injector leads and various other piping, all of which lie on the outside of the actual lagging. The feedwater heater is mounted immediately behind the stack underneath the jacket.

The lower shell encloses pilot-mounted airpumps and the main cylinders. For inspection hinged portions of the panel swing open. For hand oiling there are circular openings in the shell at the pump glands and at the motion work.

The pilot is mounted integrally with the engine truck and forms an air shield over the truck.

The cross section of the vestibule type cab determines the section of the tender and entire train. The upper half of the gangway door slides overhead during terminal stops. The windshield is of curved glass.

Trucks on the rear of the tender and on all coaches are of the inboard bearing type. Hinged panels continue the cross section of the cars, eliminating eddies in the air stream and affording good accessibility to the trucks.

Now that brake cylinders are mounted directly on the truck the underside of the coaches can be completely and smoothly paneled in.

The design elements of this unit have followed closely the mechanical layout and are, therefore, typical only to this one set of conditions. Generally speaking there should be at least as many acceptable designs as there are mechanical layouts.

THIRTY-SIX EMPLOYEES of the Delaware, Lackawanna & Western, who have served a total of 1,477 years 8 months and who since January 1 have reached retirement age, or whose physical disability has incapacitated them, have been placed upon the pension rolls, according to official announcement. This is the first pension action taken by that road since enactment of the federal pension law governing railroad employment and declared unconstitutional recently by the Supreme Court. Seven of the veteran employees served fifty or more years while 14 others served forty or more years. Voluntary pensions paid by the Lackawanna in 1934 to 830 retired employees totaled \$646,703. Since the inauguration of the pension plan, June 1, 1922, 2,332 employees had been retired upon pensions at the close of last year and \$7,387,290 had been contributed by the company to the old age security of its employees.

Reorganization of Traffic Departments Recommended

(Continued from page 184)

into a limited number of joint agencies, one representing each of the competing channels. This agency would become a vital, live force in stimulating business, in furnishing complete information, and in servicing the patrons' traffic movements. With the development of these joint agencies, there would be a gradual but inevitable tendency for the supervisory and directive forces of the carriers similarly to coalesce, so that in time there would come about a limited number of competing sales organizations, each serving a large group of non-competing carriers, utilizing modern advertising as well as personal contacts. Such organizations would prove far more serviceable, effective and at the same time more economical.

Personnel

The traffic personnel of the reporting carriers in 1933 aggregated slightly more than 29,000 persons. Of this number not quite 1,500 were officers, about 15,000 clerks, about 3,000 stenographers and typists, and about 8,000 solicitors. The average salary of all officers and employees was \$143 per month, which was about the same as departments with a similar distribution of personnel (operative and accounting). The average salary of officers was about \$450 per month.

The average age upon entering railway employ of officers, clerks, and solicitors in the freight traffic department was 20 years, and of stenographic help 22½ years. Of the officers, 23 per cent entered railroad service employ at 16 years or under, and 67 per cent at under 20 years of age. Sixty-three per cent of the solicitors and 64 per cent of the clerks entered the service while still under 20 years of age.

The education of the average freight traffic department employee ended with the tenth grade in each of the officer and employee groups, except the stenographic service, where it was approximately one grade higher. About 40 per cent of officers, clerks and solicitors, 50 per cent of miscellaneous employees, and 60 per cent of stenographers completed high school. About 5 per cent of the officers, and 4 per cent of the employees were college graduates.

The average experience of the administrative officers was not quite 35 years, of which 33 years were in railway service. The service experience was narrow. Of administrative officers, about ½ had rate clerical experience and ½ sales clerical experience, and about ½ had solicitation experience. About ½ of the pricing officers had solicitation experience, and about ½ of the sales officers had rate clerical experience.

The average age of officers was just under 52 years; 2 per cent were over 70 years; 21 per cent over 60; 53 per cent over 50; 88 per cent over 40; and 99 per cent over 30 years of age. The average age of solicitors was 44 years and of clerks not quite 40 years.

From the foregoing somewhat sketchy analysis of the present personnel, several important facts appear: (1) The pattern is practically the same whether the clerical forces, the station agents, the solicitors, the officers or the chief officers are examined, indicating the tremendous influence of longevity and length of service; (2) on the whole, the personnel is not so distributed among age groups as to provide a continuous supply of officer material ambition, and is of an average age likely to produce a shortage of such material in the not distant future. These solid age blocks serve to discourage younger men, and evidently have prevented rail traffic departments from securing younger men of a generation that has been able to secure a greater education than previous generations enjoyed; (3) the educational qualifications of the officers and men is subnormal when viewed in the light of those which exist in other industries. The lack of education is not an absolute handicap, but has prevented rail carriers from being of the greatest service to industries developed and manned by those having educational advantages, and has put rail carriers at a disadvantage in competing with common carriers whose ranks contain both experienced and better educated junior staffs, and (4) the experience of the personnel is too narrow, and requires broadening by service in other railway departments, and particularly in other industries.

Motor Carrier Bill Passed

Ten-year campaign for regulation ended when
Senate accepted House amendments

WASHINGTON, D. C.

AFTER years of more or less bitter controversy over the question of federal regulation of interstate bus and truck transportation and ten years after the introduction of the first bill on the subject in Congress, the motor carrier regulation bill recommended by Co-ordinator Eastman went through Congress with surprising ease after it reached the stage of final consideration in the House and the Senate. The bill, S.1629, passed by the Senate with very little discussion on April 16, was passed by the House with some amendments on August 1 by a vote of 193 to 18, after one afternoon session of debate, and it was sent to the President for his signature after the Senate had accepted the House amendments on August 5, thereby avoiding the necessity for a conference, with practically no discussion.

Exemptions

It is mainly in the form originally recommended by Mr. Eastman, although the House amendments exempt from the principal regulatory features of the bill motor vehicles engaged exclusively in carrying livestock, fish, or agricultural commodities not including manufactured products thereof, and those engaged exclusively in the distribution of newspapers. There is also an exemption for motor vehicles controlled and operated by any farmer and used in the transportation of his agricultural commodities and products thereof, or in the transportation of supplies to his farms, or those operated by agricultural co-operative associations.

On the insistence of the state commissions there was also included in the bill a proviso that nothing in the part relating to rate regulation shall empower the Interstate Commerce Commission to prescribe, or in any manner regulate, the rate, fare, or charge for intrastate transportation, or for any service connected therewith, for the purpose of removing discrimination against interstate commerce (under the so-called Shreveport doctrine) or for any other purpose whatever. This was the principal feature of the legislation on which the railroads and the state commissions had failed to agree.

Passage of the bill had been supported not only by the railroads but also by the state commissions and the principal organizations of truck and bus operators and it had been included in the list of subjects recommended to Congress by President Roosevelt as part of Co-ordinator Eastman's program. It was opposed to the last by the National Highway Users' Conference and by organizations representing the farmers, and a fight against it was led in the House by Representative Wadsworth, of New York, who attempted to substitute the bill drafted by the Huddleston sub-committee of the committee on interstate and foreign commerce which contemplated a much less comprehensive form of regulation and no regulation of truck rates.

No Record Vote

The bill was passed in the Senate without objection, no vote being taken, and in the House without a record vote, although there were several standing votes representing less than half of the membership. The debate in the House was on July 31, when several speeches were

made both for and against the bill and the committee amendments and one or two others were adopted. Late in the day after many members had left the Capitol, Representative Wadsworth moved to recommit the bill to the committee with instructions to report the Huddleston bill, which the full committee had rejected in favor of the Senate bill with amendments. On this motion there were 39 ayes and 120 noes but after the point had been raised that no quorum was present it was decided to postpone the question until the following day. On August 1 the vote on the motion to recommit was 38 to 168 and on final passage the vote was 193 to 18.

Gratification over the passage of the bill was expressed by Co-ordinator Eastman, who had worked closely with both the Senate and the House committees on the various changes made in the bill since its introduction.

Eastman Sees Beneficial Effects

"I think this legislation is going to have a very beneficial effect on the whole transportation situation, although too much ought not to be expected from it," said Mr. Eastman. "I think it will help the railroads and also help the bus and truck industries, and will not eliminate competition in the transportation field. The chief beneficial effect it will have will be in stabilizing conditions by preventing demoralizing and destructive competition. It ought to lay the foundation for sound future development in transportation and bring about better co-operation and co-ordination in that industry. It doesn't mean, necessarily, that truck and bus rates will be increased, except where they may be below a sound level."

Among the amendments to the Senate bill finally adopted was one changing the date of the "grandfather" clause to June 1 and by another amendment proposed by Representative Truax the date was changed to July 1 for contract carriers, so that if in bona fide operation on that date they may obtain permits to operate without further proceedings.

The House committee had proposed an amendment exempting vehicles carrying "unprocessed" agricultural products but on motion of Representative Pettengill, who said it was not the intent of the committee that this should include pasteurized milk or unginned cotton as processed products, the language was changed by using the word "manufactured." Representative Bland, of Virginia, proposed including fish and shellfish among the exempted products.

Representative Monaghan, of Montana, attempted to obtain an amendment limiting the hours of service of employees to 8 within 24 but it failed by a vote of 34 to 36. The American Trucking Associations, Inc., had sent to members of the House a letter protesting against this amendment and a letter was read from Co-ordinator Eastman opposing such a regulation in the absence of further study of the subject.

Representative Wadsworth, in opposing the bill, said that "the shippers of the country are not asking for this legislation. No appearance of any importance before the sub-committee was made on behalf of any great shipping interest bringing complaints against the serv-

ices rendered by trucks. It is not inaccurate to say that the influences behind this measure are centered largely amongst the railways, both the officials of the railroad companies and the members of the railway labor unions." He also referred to the difficulty of regulating trucks owned by individuals.

Chairman Rayburn, of the committee on interstate and foreign commerce, in opening the debate, said: "I think that after the alarm is over and these gentlemen who have worked on this problem so faithfully demonstrate to the House that in these matters of trucks and busses in interstate commerce, uncontrolled and unregulated at this time as to safety or anything else, when the members find that this bill, in the regulation of matters in interstate commerce, does not go as far as many of the states have gone in regulating matters of transportation by bus and truck in intrastate commerce, regulations that have been accepted from one end of the land to the other, with every state in the Union having some sort of regulation of busses and trucks, more than half of them very stringent regulations, I think the objections to this bill will practically vanish."

Principal Provisions of the Bill

The act is to be called the "Motor Carrier Act, 1935," and it is to be considered a part of the interstate commerce act. It vests jurisdiction over interstate motor carriers in the Interstate Commerce Commission, assisted by joint boards of state representatives. Section 202 declares it to be the policy of Congress "to regulate transportation by motor carriers in such manner as to recognize and preserve the inherent advantages of, and foster sound economic conditions in, such transportation and among such carriers in the public interest; promote adequate, economical, and efficient service by motor carriers, and reasonable charges therefor, without unjust discriminations, undue preferences or advantages, and unfair or destructive competitive practices; improve the relations between, and co-ordinate transportation by and regulation of, motor carriers and other carriers; develop and preserve a highway transportation system properly adapted to the needs of the commerce of the United States and of the national defense; and co-operate with the several states and the duly authorized officials thereof and with any organization of motor carriers in the administration and enforcement of this part."

The bill provides for certificates of public convenience and necessity for common carriers and permits to operate for contract carriers, but those in bona fide operation on June 1 or July 1 are to be issued certificates or permits by the commission on application without further proof that public convenience and necessity will be served. Certificates are to be issued to any qualified applicant therefor, authorizing in whole or in part the operations covered by the application, if it is found that the applicant is fit, willing, and able properly to perform the service proposed and to conform to the provisions of the law and the requirements, rules, and regulations of the commission, and "that the proposed service, to the extent to be authorized by the certificate, is or will be required by the present or future public convenience and necessity;" otherwise the application is to be denied.

To regulate common carriers the commission is authorized to establish reasonable requirements with respect to continuous and adequate service, transportation of baggage and express, uniform system of accounts, records and reports, preservation of records, qualifications and maximum hours of service of employees, and safety of operation and equipment. For contract carriers the commission is authorized to establish requirements with respect to accounts, records,

and reports, qualifications and maximum hours of service of employees, and safety of operation and equipment. For private carriers it is authorized to establish, if need therefor is found, reasonable requirements to promote safety of operation, and to that end prescribe qualifications and maximum hours of service and standards of equipment.

Rate Regulation in Different Degrees

Rate regulation is provided for in different degrees for the classes of carriers. For common carriers the commission may fix the maximum, minimum, or going rate. For contract carriers it may only approve or disapprove the minimum contract rates as filed. Both classes of carriers are forbidden to discriminate unduly but there is a proviso that the prohibition shall not be construed to apply to discriminations, prejudice or disadvantage to the traffic of any other carrier.

In the exercise of its power to prescribe just and reasonable rates for common carriers the commission is to give due consideration, among other factors, to the "inherent advantages of transportation by such carriers, to the effect of rates upon the movement of traffic by such carriers, to the need, in the public interest, of adequate and efficient transportation service by such carriers at the lowest cost consistent with the furnishing of such service, and to the need of revenues sufficient to enable such carriers, under honest, economical, and efficient management, to provide such service."

Common carriers are required to file with the commission and print and keep open to public inspection tariffs showing all the rates, fares, and charges for transportation, and all services in connection therewith, and to adhere to the published rates. Changes may be made only on 30 days' notice, except that the commission may authorize changes on shorter notice.

Except as to safety and labor provisions exemptions are provided in the bill for such classes of carriers as school busses, taxicabs, hotel cabs, busses used in national parks, trolley busses, busses or trucks used in zones commercially a part of a municipality where such transportation is under common control for a continuous carriage or shipment, casual or occasional or reciprocal operators, and the motor vehicles mentioned in the amendments engaged in the transportation of agricultural commodities, fish, or newspapers.

Regulation of Motor Carrier Finances

Provisions are included in the bill for regulation by the commission of security issues, consolidations, mergers, or acquisitions of control, and the commission is authorized to inquire into the organization of motor carriers and brokers and into the management of their business, to keep itself informed as to the manner and method in which the same is conducted, and to transmit to Congress, from time to time, such recommendations as to additional legislation relating to such carriers or brokers as the commission may deem necessary.

The commission is also authorized to investigate and report on the need for federal regulation of the sizes and weights of motor vehicles and combinations of motor vehicles and of the qualifications and maximum hours of service of employees of all motor carriers and private carriers of property by motor vehicle, availing itself of the assistance of all departments or bureaus of the government and of any organization of motor carriers having special knowledge of any such matter.

Provisions of the bill are to become effective on October 1 but the commission may postpone the effective date of any provision as long as to January 1.

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NEWS

Six Months Railway Net a 1.81 Per Cent Return

Half-year total of \$194,812,659 compares with \$226,867,027 or 2.1 per cent in 1934

Class I railroads for the first six months of 1935 had a net railway operating income of \$194,812,659, which was at the annual rate of return of 1.81 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics of the Association of American Railroads. In the first six months of 1934, their net railway operating income was \$226,867,027 or 2.1 per cent. Operating revenues for the first six months totaled \$1,635,594,320, compared with \$1,629,897,102 for the same period in 1934, an increase of 0.3 per cent. Operating expenses amounted to \$1,259,462,664, compared with \$1,212,287,060 for the same period in 1934, an increase of 3.9 per cent.

of 0.5 per cent. Operating expenses in June totaled \$216,464,096, compared with \$208,313,245 in the same month in 1934, or an increase of 3.9 per cent.

Class I railroads in the Eastern district for six months had a net of \$142,566,748, at the rate of 2.59 per cent. For the same period in 1934, their net was \$148,790,585, or 2.71 per cent. Operating revenues in the Eastern district for six months totaled \$855,405,496, a decrease of 0.1 per cent compared with 1934, while operating expenses totaled \$622,243,129, an increase of 1.7 per cent. Railroads in the Eastern district for June had a net of \$27,537,384, compared with \$26,268,645 in June, 1934.

Class I railroads in the Southern district for six months had a net of \$24,425,029, at the rate of 1.54 per cent. For the same period in 1934 their net amounted to \$31,784,479, at the rate of 2 per cent. Operating revenues in the Southern district for six months amounted to \$212,564,031, an increase of 0.5 per cent compared with the same period in 1934, while operating ex-

Pension Bill Reported with Inquiry Provision

New revision calls for investigation of all pertinent facts by special commission

A further revision of the Crosser railroad pension bill, H. R. 8651, including the pension plan proposed by the Railway Labor Executives' Association, but with a postponement of the effective date to March 1, 1936, and provision for a prior investigation of all pertinent facts relating to a retirement annuity system applicable to railroads by a special commission to report by January 1 with its recommendations for legislation, if any, was reported by the House committee on interstate and foreign commerce on August 3. The bill authorizes the appropriation of such money from time to time out of the Treasury of the United States as may be necessary to carry it into effect, but the companion bill which proposes to impose a tax on the railroads and their employees to provide the funds had not been acted upon by the ways and means committee, to which it was referred.

The bill also contains the provision which was in the railroad retirement act and the earlier drafts of the bill for a special report by the Railroad Retirement Board within four years with specific recommendations for such changes in the retirement system set up as shall assure its adequacy, but the revised bill provides that until January 1, 1936, the duties and authority of the board under the section providing for the report are to be limited to co-operation with and action under the direction of the special commission. An additional provision is inserted directing the board also to report at the earliest practicable time with recommendations with regard to the desirability and practicability of substituting the benefits to employees under the bill for any obligation for prior service or for existing provisions for the voluntary payment of pensions by carriers so as to relieve the carriers from obligations under their existing systems and transfer them to the new system.

"It is recognized," the bill reads, "that existing individual carrier pension plans are wholly at the option of the carriers, unless in any case express provision is made otherwise, and no restriction is imposed under this act upon such plans; nor is it expected that carriers will modify existing pension plans on account of this act beyond a reduction of current pension payments under such existing plans in amounts equal to the annuity payments currently

Class I Railroads—United States

Month of June

	1935	1934	Per Cent of Increase
Total operating revenues.....	\$281,335,912	\$282,779,493	0.5 Dec.
Total operating expenses.....	216,464,096	208,313,245	3.9
Taxes.....	20,586,314	21,166,429	2.7 Dec.
Net railway operating income.....	34,024,691	42,037,757	19.1 Dec.
Operating ratio—per cent.....	76.94	73.67	
Rate of return on property investment.....	1.63%	2.00%	

Six Months Ended June 30

	1935	1934	Per Cent of Increase
Total operating revenues.....	\$1,635,594,320	\$1,629,897,102	0.3
Total operating expenses.....	1,259,462,664	1,212,287,060	3.9
Taxes.....	122,037,561	126,751,756	3.7 Dec.
Net Railway operating income.....	194,812,659	226,867,027	14.1 Dec.
Operating ratio—per cent.....	77.00	74.38	
Rate of return on property investment.....	1.81%	2.10%	

Dec.—Decrease.

Class I railroads in the six months paid \$122,037,561 in taxes, compared with \$126,751,756 in the same period in 1934 or a reduction of 3.7 per cent. For June alone, the tax bill amounted to \$20,586,314, a reduction of \$580,115 or 2.7 per cent under June, 1934.

Forty Class I railroads failed to earn expenses and taxes in the first six months of 1935, of which 9 were in the Eastern district, 8 in the Southern and 23 in the Western district.

Class I railroads for June had a net of \$34,024,691, which, for that month, was at the annual rate of 1.63 per cent. In June, 1934, their net was \$42,037,757, or 2 per cent. Operating revenues for the month of June amounted to \$281,335,912, compared with \$282,779,493 in June, 1934, a decrease

penses totaled \$167,476,804, an increase of 6.2 per cent. Class I railroads in the Southern district for June had a net of \$3,532,292, compared with \$2,670,301 in June, 1934.

Class I railroads in the Western district for six months had a net of \$27,820,882, at the rate of 0.75 per cent. For the same six months in 1934 they had a net of \$46,291,963, at the rate of 1.24 per cent. Operating revenues in the Western district for six months amounted to \$567,624,793, an increase of 1 per cent above the same period in 1934, while operating expenses totaled \$469,742,731, an increase of 6.2 per cent. For June the railroads in the Western district reported a net of \$2,955,015, compared with \$13,098,811 for the same roads in June, 1934.

received by the employee under this act."

The proposed special commission, to be appointed by the President, would be directed to make a thorough investigation, at a cost not exceeding \$60,000, of all pertinent facts relating to a retirement system "and particularly any and all questions for the investigation of which provision is made under the preceding section," relating to the report of the board. It would be authorized to hold hearings "respecting desirable provisions of a sound retirement and annuity system" and in the making of its investigation to consider the experience of other industries and of governments, as well as of the railroad industry.

Indianapolis Track Elevation Project

A \$15,000,000 track elevation project sought by city officers and civic groups in Indianapolis, Ind., has been cut to \$3,500,000, and application for federal government funds to finance the curtailed program will be made through the Works Progress Administration.

Engineering Draftsmen Wanted

The United States Civil Service Commission announces examinations for various grades of engineering draftsmen, to be held in Civil Service headquarters throughout the country, applications to be received at the Washington office by or before August 19. The salaries range from \$1,440 to \$2,300, and applicants may choose architectural, civil, electrical, mechanical or structural engineering.

I. C. C. Modifies State Fare Orders to Permit Experiments

On petition of the railroads, to enable them to continue their experiments with reduced passenger fares from October 1 to March 31, 1936, the Interstate Commerce Commission has issued orders modifying its previous orders prescribing intrastate fares in Alabama, North Carolina, Georgia, Michigan, Nebraska, and Wisconsin.

I. C. C. to Investigate Lake Cargo Coal Rates

The Interstate Commerce Commission has ordered an investigation respecting the lawfulness of all rates, charges, rules, regulations, and practices of the railroads applicable to the carload movement of bituminous coal in interstate commerce to ports on Lake Erie, Lake Ontario, and the St. Lawrence river for transshipment by water to Port Huron, Mich., and points below, to and including Brockville, Ont.

Baltimore & Ohio Magazine "Farm Number"

The July issue of the Baltimore & Ohio magazine is designated a "Farm Number" and in this connection is devoted to articles on the activities of the Baltimore & Ohio in co-operating with farmers who live along its lines. For a number of years, a statement issued in connection with the magazine says, "the Baltimore & Ohio has manifested its interest in farm life, through the work of its Commercial Development Department and its general agricultural agent. Periodically special B. & O. trains

have traversed its lines, making stops at the agricultural centers, demonstrating the advantages of modern methods applied to agricultural work. The results obtained by our intensive efforts along the above lines are told in the pages of the 'Farm Number.'

Railroad Transportation Corps Convention

The veterans of the Railroad Transportation Corps, A. E. F., will hold their annual convention on September 23 and 24, at Columbian Hall, 3917 Lindell Boulevard, St. Louis, Mo. All who served in this department of the U. S. Army and all railway engineers connected with the army during the World War will be welcome. Reservations may be obtained by writing to C. G. Emde, 2629 Cherokee Street, St. Louis, Mo. The National Adjutant is G. J. Murray, 1210 Watson Street, Scranton, Pa.

Boulder Lake Attracts Travelers

Persons who travel over the Union Pacific to visit Boulder dam and Boulder lake, the reservoir being formed by the dam, now number about 1,000 daily, including many passengers who stop over at Las Vegas on trips to California. The lake is now 80 miles in length and 411 ft. deep at the face of the dam. The end of the lake is now 16 miles from St. Thomas, Nev., the Union Pacific branch-line terminal, which town will be 60 ft. under water when the lake reaches its full height. A total of 35,000 fingerling bass have been planted in the lake by the government.

Second Section Required for Zephyr

Due to the large number of persons seeking accommodations on the morning run of the Twin Zephyr of the Chicago, Burlington & Quincy from St. Paul, Minn., to Chicago on August 3, a standard steam train was operated as a second section 30 min. behind the first section. Requests for seats on the Twin Zephyr were so numerous on that day that the Burlington's passenger traffic representatives solicited those who could not be accommodated to take space on the steam train. As a result, 80 additional revenue passengers were secured, or enough to insure profitable operation of the second section.

Since June 2, when each of the Twin Zephyrs was placed on a schedule of two trips daily, there has been an average of 26 persons per trip in excess of the capacity of each train. Many of these have been sold accommodations on other Burlington trains and others have used other railroads.

Port Bill Passed by Congress

The House on August 5 passed the bill, S. 1633, previously passed by the Senate, to include ports, port districts, etc., with other communities in Section 3 of the interstate commerce act, so that the section will read: "It shall be unlawful for any common carrier subject to the provisions of this act to make, give, or cause any undue or unreasonable preference or advantage to any particular person, company, firm, corporation, association, locality, port,

port district, gateway, transit point, or any particular description of traffic, in any respect whatsoever or to subject any particular person, company, firm, corporation, association, locality, port, port district, gateway, transit point, or any particular description of traffic to any undue or unreasonable prejudice or disadvantage in any respect whatsoever." The bill was one of those recommended by Co-ordinator Eastman. The House committee, in reporting the bill, said it did so with the idea in mind that it will encourage and promote the freedom of movement of export, import, and coastwise commerce through the ports of the country.

New Taxes on Corporations Passed by House

The House on August 5 passed the new tax bill proposed by the Administration, with some changes, and the bill was expected to be taken up in the Senate during the week. As passed by the House the bill includes the provisions for an excess profits tax on corporations, based on the ratio of the net income to the adjusted declared value of its capital stock, ranging from 5 per cent on net income in excess of 8 per cent and not in excess of 12 per cent up to 20 per cent on the portion of the net income in excess of 25 per cent. It also includes an income tax on corporations ranging from 13 1/4 per cent to 14 1/4 per cent.

R.R. Credit Corporation Has Distributed 34 Per Cent

The Railroad Credit Corporation has made total distributions of \$25,020,094, or 34 per cent of the fund administered by it, according to report filed with the Interstate Commerce Commission. Payments in cash amounted to \$11,285,401 and credits on obligations of the carriers to the corporation aggregated \$13,734,693. E. G. Buckland, the corporation's president, announced that cash receipts for the month of July included \$153,477 payments in reduction of loans, \$38,770 interest, \$5,988 dividends on investments, and \$16 from miscellaneous sources, totalling \$198,251. Distribution No. 19 was made as of July 31, returning \$735,885 or the equivalent of 1 per cent of the fund.

Burlington Passenger Traffic Heavy

The week-end of August 3 witnessed what was probably the heaviest westbound vacation traffic handled by the Burlington since 1929. Individual travel since the forepart of July has been the heaviest in years, necessitating extra cars daily. On August 3 and 4, 20 cars were handled on the Aristocrat, and 18 cars each on the North Coast Limited and the Empire Builder, while the Overland Express had 19 cars on August 2, and 18 in August 3.

Tour business, likewise, has been heavy. During the week-end of August 3, a total of 348 passengers left Chicago in extra sleepers on Burlington escorted tours, while 148 passengers were carried on a special train. In addition, 336 passengers left for Yellowstone, the Pacific Northwest and California, in what was probably the largest long-distance special train ever operated out of Chicago by the Burlington

for other than troop movements. On August 4 still another special train carried 168 passengers from Chicago to the Pacific Northwest and California. The group, or organized, tour traffic on Friday, Saturday and Sunday of that week totaled 1,260 passengers, while individual traffic is estimated at 1,600 passengers.

Sleeping, Dining, Observation Cars Added to Winnipeg Limited

Two Pullman sleeping, dining, observation-lounge cars have been added to the Winnipeg Limited, the Great Northern's overnight train between the Twin Cities and Winnipeg, Man. The cars contain eight sleeping sections, dressing rooms, a kitchen, a pantry, dining facilities and an observation-lounge room. These air-conditioned cars are attended by a porter, a cook, a cook's helper and two waiters.

Marshall Field & Co. Merchandise Express

Marshall Field & Company's merchandise express, described in the *Railway Age* of July 6, which made a tour of Mississippi Valley cities from June 21 to July 26, has started on a second trip, to reach merchants in Wisconsin and Minnesota. During this 12-day tour the train will stop at Milwaukee, Wis., Sheboygan, Green Bay, Wausau, LaCrosse, Madison, Minneapolis, Minn., and St. Paul. On its first trip, approximately 12,000 merchants visited the train.

Steam Railway Accident Statistics April, 1935

The Interstate Commerce Commission's completed statistics of steam railway accidents for the month of April, now in preparation for the printer, will show:

Item	Month of April		4 months ended with April	
	1935	1934	1935	1934
Number of train accidents:				
Total	482	472	2,271	2,205
(At highway grade crossings, included in total)...	13	11	59	53
Number of casualties in train, train - service and non-train accidents:				
Trespassers:				
Killed	193	196	689	645
Injured	235	270	838	796
Passengers on trains:				
Killed	1	1	6	9
Injured	99	105	717	509
Employees on duty:				
Killed	53	51	191	206
Injured	1,208	1,269	5,228	5,538
All other nontrampassers:*				
Killed	155	128	546	509
Injured	479	485	2,321	2,206
Total—All classes of persons:				
Killed	402	375	1,432	1,369
Injured	2,021	2,129	9,104	9,049
Casualties to "Other nontrampassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties for all classes of persons, including both trespassers and nontrampassers, were as follows:				
Killed	158	115	522	477
Injured	325	266	1,587	1,483

Injunction Against Car Spotting Allowance Sought

A bill seeking a temporary injunction against the United States and the Indiana Harbor Belt, in connection with a supplemental order of the Interstate Commerce

Commission in the car spotting case prohibiting allowances by railroads when switching is performed by industries was filed by the Inland Steel Company in the federal district court at Chicago on August 5. Two additional bills arising from orders issued by the commission in Ex Parte 104, Part 2, were filed in New Orleans, La., on the same day, one on behalf of the Celotex Company against the government, the Missouri Pacific, the Texas & Pacific and the Southern Pacific; and the other on behalf of the Pan American Petroleum Corporation against the government and the Yazoo & Mississippi Valley.

The federal court at Peoria has set September 12 as the date on or before which it will hear argument to make permanent the temporary injunction obtained against the commission by the Keystone Steel & Wire Company. The temporary injunction obtained by the Standard Oil Company of Louisiana by order of the federal district court at New Orleans remains in effect until the matter has been finally disposed of.

Canadian Roads in First Half of 1935

The Canadian Pacific reported a net profit of \$6,062,018 for the first six months of 1935, a reduction of \$1,992,394 from last year's net of \$8,054,412. The decline was principally due to heavier expenses, as the drop in gross revenues was held to \$682,055—\$56,528,624 comparing with \$57,210,680. Operating expenses totalled \$50,466,605, as compared with \$49,156,267 a year ago.

In June, the C. P. R. gross amounted to \$10,189,871, as compared with \$10,009,263 a year ago. Expenses totalled \$8,786,059, as compared with \$8,253,684, leaving a net of \$1,403,812, as compared with \$1,755,579 in June, 1934.

For June the Canadian National reported a net deficit of \$494,332, as compared with a net revenue of \$988,293 for June of last year, representing a decrease of \$1,482,625. Net revenue for the six months of this year ended with June amounted to \$2,179,065, which compares with \$4,378,541 for the same period of last year, a decrease of \$2,199,476.

Operating revenues in June were \$13,713,606, a decrease of \$201,841 as compared with June, 1934. For the six months of this year gross revenues amounted to \$80,143,322, an increase of \$646,575 over the corresponding period of last year.

Operating expenses in June, 1935, amounted to \$14,207,938, an increase of \$1,280,784 over June, 1934. For the six months of 1935 operating expenses were \$77,964,257, an increase of \$2,846,051 over the similar period of 1934.

I.C.C. to Proceed with Reorganization Hearings

Chairman Wheeler of the Senate committee on interstate commerce on August 1 addressed a letter to B. H. Meyer, acting chairman of the Interstate Commerce Commission, suggesting that the commission delay going forward with important railroad reorganization proceedings before the investigation of railroad financial matters which is to be conducted by the Senate committee under a resolution adopted

by the Senate. He said he had received protests from independent bondholders' committees and investors and that "the most thorough inquiry and preparation should first be had before the reorganization of a half billion dollar railroad property is undertaken which proposes to leave the same financial interests in control that have admittedly been unable to manage the road successfully whatever the reasons may be."

Commissioner Meyer replied that obviously the public interest must be constantly before the commission, but that it has a duty to afford hearings. "We have been and are mindful," he said, "of our duty to dispatch business, and to hear those who, by law, have been accorded a right to be heard fully, as well as promptly; that duty we will endeavor to perform so as to accomplish the ends of justice, to conserve the public interest, and to co-operate with all other agencies of the government." He added that in respect of the particular statute relating to reorganizations the commission must co-operate with the courts as well. Commissioner Meyer said the commission wished to accord the Senate committee every possible aid in its investigation. Senator Wheeler also referred to the "need for making the committee's inquiry useful to investors during their current difficulties."

Railroads Should Be Relieved of All Crossing Elimination Costs

Railroads should, in justice, be relieved altogether of further responsibility or expense in connection with grade separations, according to the view of the Pennsylvania management as outlined in the August issue of "Train Talks," a pamphlet which is distributed at P. R. R. stations and on its trains. The statement maintains that grade crossing elimination projects should hereafter be carried out by state and national authorities, and their costs budgeted in programs for highway work, this contention being based on the great changes in transportation which have followed the growth of motor vehicles and the development of the highways into a nation-wide system.

"Highway traffic," the statement points out, "has grown by leaps and bounds until now the vehicles which cross railroad lines at grades throughout the country, in a day, are thousands of times greater in number than the units of train traffic which cross the highways. The number of railroad trains operated has been materially reduced in recent years and grade crossing eliminations have ceased to be of measurable benefit to the railroads."

From the foregoing the Pennsylvania argues that grade crossing eliminations "have become highway improvements, pure and simple, and, as such, they are rightfully public responsibilities to be met at public expense." In support of its position the statement directs attention to the precedent of the national administration in ear-marking \$200,000,000 of federal work relief money for grade crossing removal projects. Also, it points out that, although a thousand or more crossings are being eliminated in the United States every year, highway extensions have created new crossings so rapidly that the present num-

ber is actually greater than ten years ago.

The statement concludes with the observation that "the only effective solution to the problem" is the acceptance by federal and state authorities "of full responsibility for grade crossing eliminations, as part of the country's highway building program."

Turbine Locomotive Built by London, Midland & Scottish

The London, Midland & Scottish has recently completed a turbine locomotive, No. 6202, built for test purposes. The non-condensing turbine, which is of the Lysolm type, and the reduction gearing were supplied by the Metropolitan Vickers Electrical Company, Ltd. In reality two turbines are employed, an ahead turbine on the left-hand side in the place usually occupied by a reciprocating cylinder and steam chest and a reverse turbine on the right-hand side.

The ahead turbine has six nozzles, two Curtis stages and several expansion stages. It is permanently connected to the triple reduction gear located between the frames under the smokebox. The gear is connected to the leading pair of coupled wheels by means of a quill drive, such as used for some electric locomotives. This turbine develops 2,000 hp. at full admission. The reverse turbine, which is smaller, has three nozzles and two Curtis stages. When running ahead the reverse turbine is disconnected. To reverse, steam is first shut off and the engine brought to a stop by the brake. After this the re-

verse turbine may be connected by means of a clutch and steam admitted to this turbine. When the locomotive is backing up the ahead turbine revolves backwards. Both turbines exhaust to the atmosphere, through double variable nozzles and twin stacks, a back pressure as low as 2 lb. per sq. in. being anticipated. Turbine and reduction gears are fully enclosed.

The control mechanism in the cab is quite simple. There is a small horizontal panel in front of the engineman with six numbered steps for the nozzles of the ahead turbine and three for the reverse turbine. There is also a clutch lever for connecting the reverse turbine, this being interlocked so that it can not be moved except when the locomotive is standing.

A radiator for cooling the oil used in the turbine and reduction gear is located on the front deck ahead of the smokebox.

The running gear is of the 4-6-2 type with 75-in. rod-connected driving wheels. The weight of the locomotive is 241,900 lb., of which 158,250 lb. is on the drivers, 43,000 lb. on the front truck, and 40,650 lb. on the trailing truck. Timken roller bearings are used on the driving axles and on the tender.

The tender is of the six-wheel type, weighs 122,400 lb. loaded and has a capacity of 4,800 U. S. gallons of water and 10 tons of coal.

The boiler carries 250 lb. steam pressure, the steam being superheated to an anticipated temperature of 750 deg. F. The small diameter of the boiler, outside, is

68½ in. Shell and wrapper sheets are of two percent nickel steel. The firebox measures 82 in. by 62½ in., and provides a grate area of 45 sq. ft. There are 112 tubes, 2½ in. diameter, and 32 flues, 5½ in. diameter. The distance between tube sheets is 19 ft. 3 in. The evaporating heating surface is 2,314 sq. ft., 217 sq. ft. being in the firebox and, 2,097 sq. ft. in the tubes and flues. The superheater has 653 sq. ft. of surface.

In general appearance and design the locomotive closely resembles an ordinary British locomotive of the Pacific type and is simpler than any turbine locomotive previously built. As an experimental design it is important and operating results will be watched with interest. Coal savings anticipated are said to be 15 per cent.

Diesel Meets Demand for Reduced Operating Costs, Says Codrington

Because he is confident that the demand for efficient operation will remain after all other railroad problems have been solved, George W. Codrington, president of the Winton Engine Corporation, is "optimistic with reference to the future of the Diesel engine in railroad service." Mr. Codrington expressed this view in an article entitled "Diesel on Rails" which appeared in the June issue of the *Scientific American*. It was the third and last of a series of articles which this magazine published on railroad motive power; the first—an article on the steam locomotive—was prepared

Generous to Labor

The Union Pacific railway points the way to peace between employer and employee in its provisions for the workers involved in the proposed merger of all accounting offices in Omaha.

The terms of the agreement, just announced, reflect the extremely generous attitude of the road toward its men. They also indicate that the road and its workers have reached a plane of mutual understanding, sympathy and co-operation unusual in the industrial world. This happy situation is in striking contrast to the bickering that is going on in some circles, with labor and capital distrustful of each other, and both doubtful of the effect of the administration's labor legislation.

The compulsion of law is not needed and, indeed, would be resented when the two parties involved, employer and employee, can reach so just an arrangement as that referred to.

The Union Pacific seeks to unite its subsidiary accounting offices in the Omaha headquarters building to accomplish economies in operation. The road and its stockholders will benefit by those economies. A part of the economies to be gained by the improved technic in the accounting department is to be used to cushion the shock of the change in home and in employment to workers who must uproot ties formed in Port-

land, Pocatello, Los Angeles, Salt Lake City and St. Joseph, and remove to Omaha.

Here are some of the things the railroad will do for these workers:

It will make no reductions in regular positions, pending consummation of the merger. In other words, it agrees to peg employment for a year in these offices.

For employees who cannot, or will not remove to Omaha, the road will give a dismissal wage equal to one full year of their present compensation, and will pay this wage in a lump sum or in 24 equal installments.

For a period of a year from the date of the merger, no employee in Omaha will be adversely affected by any changes in work or personnel.

Employees who have bought or are buying homes in the other cities and who are threatened with losses are given the guaranty that the road will purchase their homes at fair value or make good any loss from their sale at less than reasonable value. This guaranty extends to those who have partly paid for homes.

The company will transfer to the new homes in Omaha without expense to the employees all household effects, and will pay traveling expenses of employees and their families and living expenses here

for 48 hours after arrival of household effects.

These are some of the striking clauses in the agreement between the road and the Brotherhood of Railway Clerks. The agreement was not forced; it was reached after the railroad itself had proposed direct negotiations on the subject of the employees' interest in the proposed merger. The cost to the road is estimated at one-half million dollars, which will have to come out of the economies expected to result from the consolidation of offices.

Surely this understanding between the Union Pacific and a portion of its workers marks a high point in employer-employee relationships. It is based on something far better than the ukase of law, or grudging concessions won from the disruptive effects of a strike.

It is based on understanding. It is based upon a common wish to be friends. It is based upon a mutual recognition of the fact that employer and employee, boss and worker, are jointly concerned in security of employment, economy of operation, continuity of business, freedom from compulsion.

It shows that when fair-minded men meet around a table in frank and honorable discussion of a problem, a peaceful, equitable and lasting solution can be found.

by William C. Dickerman, president of the American Locomotive Company, and published in the April issue while the second entitled "Electricity's Place in Railroading" was prepared by G. I. Wright, chief electrical engineer of the Reading and the Central of New Jersey, and published in the May issue. Abstracts of Mr. Dickerman's and Mr. Wright's articles appeared respectively in the *Railway Age* of April 13, page 584, and the *Railway Age* of May 25, page 833.

Mr. Codrington contended that "Diesel power provides the most satisfactory answer to the railroads' demands for economy, a most vital need at present," because "we know that the Diesel engine is the most economical prime mover available, and we know further that this type of power plant can be successfully applied to main line railroad trains and locomotives." Continuing, he expressed his belief that railroads will adopt this type of motive power "as widely and rapidly as their financial condition will permit"; and he maintained that such a belief is not "unduly optimistic to those who are familiar with the history of the Diesel engine in other fields as well as with recent engineering advances, some of them quite revolutionary in character, in the design and construction of the Diesel-type engine."

While he pointed out that operating figures for main-line Diesel passenger trains recently placed in service do not cover a period long enough to be conclusive, Mr. Codrington nevertheless contended that data which have come to light "are most encouraging." He referred in this connection to a compilation of figures of one month's scheduled service of the Burlington "Zephyr" which shows that train's operating cost "to be only 25 per cent of the total revenue derived from its service." Thus, he added, although it has other advantages, the Diesel engine on the basis of economy in operating costs alone "cannot be ignored when plans for securing more efficient operation are being formulated by our railroad leaders."

"The introduction of Diesel power into main-line service" he continued "comes at a time which, although most distressing to the railroads themselves, is quite favorable to the adoption of the new equipment. The railroads must do something to improve their condition and one of the things that presents itself as a solution to a major problem is the Diesel engine. To provide means and ways whereby the roads may emerge from the distressing condition of the past five years into the light of a new and more profitable era presents a challenge which railroad executives have accepted with courage and confidence. In no other phase of the situation has this been more forcefully demonstrated than in the introduction of revolutionary new equipment, such as the new streamlined, high-speed passenger trains . . . which offer one method of returning a large part of the lost traffic to the railroads. New engineering advances have made such trains possible, and it is fortunate that streamlining, air-conditioning, and the Diesel engine can be combined in such equipment, in order to provide the essential features of comfort, cleanliness, speed, and economy. The Diesel engine can hardly be left out of such a picture of the future of railroads."

Government-Financed Experiment in Reduced Passenger Fares Suggested

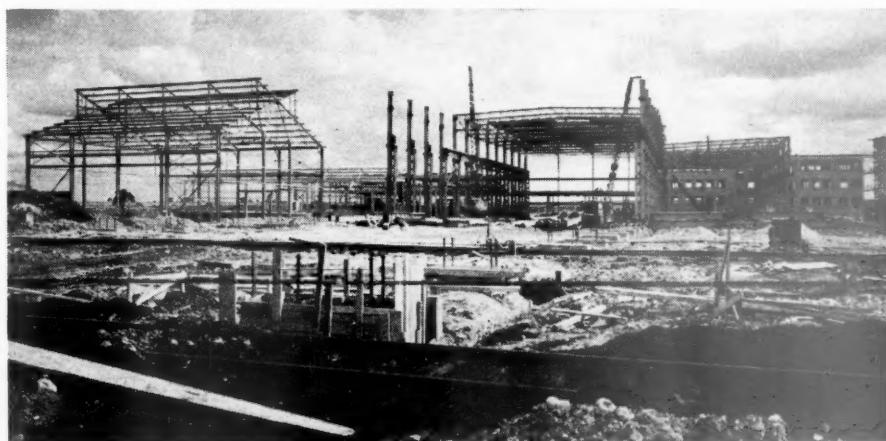
At the request of Chairman Wheeler of the Senate committee on interstate commerce Co-ordinator Eastman and his staff have given some consideration to "A Plan for Postalizing Passenger Transportation" published in pamphlet form by John A. Hastings, a former member of the New York state senate, and he has given some conclusions as to the plan in a letter to Senator Wheeler. He says that while he cannot now recommend the adoption of Mr. Hastings' plan, "stimulated passenger travel would have such good results, not only for the railroads but for the country, that experiments in such stimulation with government aid may well be desirable," and that he believes it would be well for Congress to direct the Interstate Commerce Commission to study all such plans that may be presented to it and to report at the next session of Congress its conclusions, together with a draft of any legislation which may be necessary to carry its recommendations into effect. The passenger fare investigation now pending before the commission, he says, has laid the foundation for such a study. "In general I am opposed to government subsidy of private undertakings," Mr. Eastman says, "but the railroad passenger situation is now such and general conditions are such that a financed experiment in reduced passenger fares has much to commend it. Of course, any such study should include all forms of passenger transportation as well as the railroads."

The Hastings plan proposes to establish a fare of \$1 as the regular train fare for any distance beyond approximately 50 miles but within the scope of one railroad system and a fare of \$3 for express or limited train service over a single railroad system, on the theory that such a reduction would greatly stimulate passenger traffic and make it profitable. To save the railroads from possible revenue loss while experimenting with the plan it also proposes to establish a government corporation with a capital stock of \$500,000,000 to pay to each railroad periodically the difference between the "postalized" rate and the regular rate last fixed by the company with the approval of the Interstate Commerce Commission. In commenting on the plan Mr. Eastman says it would be most unwise, even if the plan should superficially

appeal, to embark upon it without most careful consideration and that certainly the railroads ought to have an opportunity to study the plan and be heard upon it before it is adopted. The utmost in the way of legislative action that should now be considered, he says, is reference to the commission or to a special Congressional committee for study and a report. He points out, however, although the plan is described as one for "postalizing," that it is not followed in the charges for parcel post service and that in the case of ordinary mail matter the terminal service is the greatest item of cost. In considering the plan, he says, it should be kept in mind that to be financially successful a blanket fare must at least cover the cost of the average ride or journey and that it is necessary to consider, not what the average ride is now, but what it would be under the proposed plan. He also points out that the plan disregards the item of expense and that it is doubtful if the railroads would be willing to embark upon such an experiment voluntarily, particularly with a guaranty based on revenues alone.

Locomotive Plant to Be Completed in November

Progress on the construction of the Diesel-electric locomotive plant of the Electro-Motive Corporation, a subsidiary of the General Motors Corporation, at McCook, Ill., indicates that it will be ready for operation in November. The main shop building, 170 ft. by 550 ft., includes an erecting aisle 104 ft. wide providing 24 transverse construction bays, and a machine aisle 64 ft. wide. Auxiliary facilities include a blacksmith shop, 70 ft. by 75 ft.; annealing ovens, 20 ft. by 200 ft.; a paint shop; a sand blast building; and a boiler house. Electric power will be provided by a Diesel engine-operated generator. The steel frames of all the buildings are being electric welded in both fabrication and erection. The plant is being built by the Austin Company, Cleveland, Ohio. According to H. L. Hamilton, president of the Electro-Motive Corporation, the plant will be capable of producing about \$22,000,000 worth of locomotives per year. Plans are being prepared, he said, to aid the railroads in financing purchases through the agency of the General Motors Acceptance Corporation.



A Construction View of the Electro-Motive Corporation's Plant at McCook, Ill.

Chief Inspector A. G. Pack Retires; John M. Hall His Successor

Alonzo G. Pack, chief inspector, Bureau of Locomotive Inspection, Interstate Commerce Commission, retired on July 31. John M. Hall, assistant chief inspector, was appointed by President Roosevelt to succeed Mr. Pack and J. B. Brown was promoted to assistant chief inspector. These appointments were confirmed by the Senate on August 5.

Mr. Pack entered the service of the bureau as district inspector by civil service appointment in August, 1911; in January, 1914, he was appointed by the President and confirmed by the Senate as assistant chief inspector; he was appointed by the President and confirmed by the Senate as chief inspector effective July 1, 1918. The Bureau of Locomotive Inspection under his direction has made an enviable record. The circumstances were not auspicious when he took charge as chief inspector on July 1, 1918, at a time when the condition of motive power was at a low ebb and the force of inspectors seriously depleted due to transfers to other activities. Through the exercise of judicious patience and fair but firm dealing with all concerned Mr. Pack won the confidence and



Alonzo G. Pack

cooperation of the railroad officers and employees, the results of which culminated, in 1932, in the best condition of locomotives in service and the lowest accident rate ever recorded. There has been a slight recession in the condition of locomotives in service and a small increase in the yearly number of accidents since 1932 caused by the desperate situation in which the railroads find themselves, rather than by any diminution of Mr. Pack's efforts or lack of co-operation on the part of the railroads in effectuating the purpose of the locomotive inspection law.

The original Act applied only to locomotive boilers and appurtenances; a subsequent amendment extended the scope to include the entire steam locomotive, and a later amendment included all locomotives without regard to the source of power. Because of the changes of requirements the accident statistics do not lend themselves to ready comparison over periods of years but the record of boiler explosions or crown sheet failures may be taken as indicative of the improvement in the accident situation. In the fiscal year ended

June 30, 1934, as compared with the fiscal year ended June 30, 1912, the first year the boiler inspection act was operative, there was a reduction of 92.6 per cent



John M. Hall

in the number of accidents, a reduction of 94.8 per cent in the number of persons killed, and a reduction of 89.9 per cent in the number of persons injured.

A large part of this reduction in boiler explosions was undoubtedly brought about by investigations initiated and conducted by Mr. Pack with respect to the accuracy of boiler water level indicating devices. These investigations showed that gage cocks which were entered directly into the boiler gave a much higher reading under certain conditions of operation than the actual water level in the boiler. After this was determined further experiments were made which resulted in development of a water column with gage cocks and water glass attached which overcame the difficulties incident to false indications of water level. A complete account of these experiments together with recommendations in connection with the application of water columns was published in Mr. Pack's annual report for the year ended June 30, 1920.

Mr. Pack early pointed out and continually stressed in his numerous addresses that a direct relation existed between the condition of locomotives, accidents, and efficiency and economy of operation.

John M. Hall, who has been appointed by President Roosevelt and confirmed by the Senate as chief inspector, Bureau of Locomotive Inspection, Interstate Commerce Commission, was born May 20, 1879, in Kent county, Md. He was educated in the public schools and took a course in general mechanical engineering with the Scranton Correspondence School. His entire railroad service was with the Pennsylvania. From 1899 to 1903 he was in the signal department as laborer, signal repairman, and inspector. From 1903 to 1904 he was employed as a brakeman. From 1904 to 1909 he was a locomotive fireman and from 1909 to 1911 a locomotive engineer. On October 9, 1911, he was appointed locomotive boiler inspector, Interstate Commerce Commission, and was assigned successively to three districts, with headquarters at Fort Worth, Tex., Philadelphia, Pa., and the Virginia-Maryland district. On July 13, 1918, he was appointed assistant chief inspector.

Equipment and Supplies

FREIGHT CARS

THE NEWFOUNDLAND RAILWAY has ordered 20 box cars of 30 tons' capacity from the Koppel Industrial Car & Equipment Company.

IRON AND STEEL

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 900 tons of steel for a bridge at State Line, Pa., from the McClintic-Marshall Corporation.

THE STATEN ISLAND RAPID TRANSIT RAILWAY COMPANY, a subsidiary of the Baltimore & Ohio, will receive bids until August 12 at the office of H. A. Lane, chief engineer, Baltimore, Md., for furnishing, fabricating and delivering approximately 756 tons of structural steel for use in nine bridges involved in the elimination of grade crossings at Elm Park-Mariners Harbor, Staten Island, N. Y.

SIGNALING

THE MISSOURI PACIFIC has ordered from the General Railway Signal Company materials for an A P B installation between Shannon, Kan., and Union, Neb., a distance of 111 miles. The order includes 166 Type D color-light signals, 23 Type G color-light signals, 758 Type K relays, 375 Type BX rectifiers, 134 Type K1 transformers, 74 Type K $\frac{1}{2}$ transformers, 173 Type W power-off relays, 115 switch circuit controllers, 190 pole type transformers and other miscellaneous materials. Steel instrument cases are to be used for housing all devices, both at signals and cut sections; these were factory wired at G. R. S. plant. Operating energy will be secured from storage battery fed from a 550-volt a-c. transmission line through G. R. S. stepped-down pole-type transformers and G. R. S. rectifiers.

MISCELLANEOUS

Westinghouse Receives \$2,000,000 Order

A contract amounting to over \$2,000,000 has been awarded to the Westinghouse Electric & Manufacturing Company for motive power, control units and other accessories, to be installed on the new subway cars recently ordered by the Board of Transportation of New York City. Equipment to be supplied by the Westinghouse Company includes 190-hp. traction motors, multiple-unit control for operation of eight- to ten-unit trains, battery charging panels and more than 2,000 car ventilating fans of the ceiling mounted type.

MISSOURI PACIFIC.—Bids will be received until 12 o'clock noon, August 31, by J. H. Lauderdale, general purchasing agent, St. Louis, Mo., for furnishing all materials except sand, stone, cement and form lumber for installation of two flashing light

signals with the Jeffers

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signals at the crossing of U. S. Route 65 with the Missouri Pacific near Noble Lake, Jefferson county, Ark.

THE PEIPING-LIAONING RAILWAY OF CHINA has placed an order with the Locomotive Firebox Company for four sets of thermic syphons for installation in existing equipment. F. A. Jamieson is locomotive superintendent of this road, which is part of the Chinese National Railways, with headquarters at Nanking, China.

Supply Trade

Proposed Merger of Inland Steel and Ryerson

A plan for the acquisition of Joseph T. Ryerson & Son, Inc., by the Inland Steel Company has been agreed upon by the chief executives of the two companies and will be submitted to stockholders of both companies for approval. The merger contemplates the operation of the Ryerson Company under its present name and management as a wholly-owned subsidiary of the Inland Steel Company. Edward L. Ryerson, Jr., is to be active with the Inland Company as one of its chief executive officers and three members of the Ryerson board of directors will become members of the Inland board. The amalgamation brings together the warehousing and distributing facilities of the Ryerson Company and the manufacturing and fabricating facilities of the Inland Steel Company. According to a statement issued by L. A. Block, chairman, and P. D. Block, president, of the Inland Steel Company and Edward L. Ryerson, Jr., president, and Edward D. Graff, vice-president, of the Ryerson Company, the amalgamation is of interest to both parties inasmuch as 75 per cent of the various steel products marketed by the Ryerson Company through its 10 large warehouses in the central west and east can be produced by the Inland Company.

Specific details of the union are:

1. Exchange of 0.59 of a share of Inland for each share of Ryerson.
2. Operation of Ryerson under its present name and management as a subsidiary of Inland.
3. Edward L. Ryerson, Jr., president of the Ryerson Company, to become one of the chief executives of Inland.
4. Joseph T. Ryerson, Edward L. Ryerson, Jr., and Edward D. Graff to be members of the Inland board of directors.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has about completed work on a new continuous cold strip mill which is being built as an adjunct to its new hot mill.

The Air Reduction Sales Company, New York, has moved its Portland, Ore., headquarters from Third and Glisan streets to 13 Northwest Fourth avenue to provide increased space and demonstration facilities for its products. The company has also established new offices for supplies at 336 Spring street, N. W., in At-

lanta, Ga., and at 18-20 North Cheyenne avenue, in Tulsa, Okla.

William J. Hammond, traffic manager of the **Inland Steel Company** at Chicago, has been promoted to vice-president in charge of railroad sales to succeed **Charles R. Robinson**, who has been elected first vice-president and general manager of sales. **Ralph R. Flynn**, assistant traffic manager, succeeds Mr. Hammond as traffic manager. Mr. Hammond began his business career in 1901 as a clerk in the freight office of the Illinois Central at Chicago and held various positions with that road until 1911, when he was appointed contracting freight agent. The following year he left that service to take a similar position with the Union Pacific. In 1913 he was appointed traveling freight agent for that road and in 1917 eastern car



William J. Hammond

service agent. Mr. Hammond entered the employ of the Inland Steel Company in 1918, as assistant traffic manager, and in 1926 was promoted to traffic manager, which position he was holding until his recent election.

Ralph R. Flynn began his business career in 1908 as a clerk in the office of the Indiana Harbor Belt and, after holding various positions, he resigned in 1912 from that road to enter the traffic department of the Inland Steel Company at Indiana Harbor. In 1926 he was appointed assistant traffic manager of that company.

Construction

BALTIMORE & OHIO.—Bids were asked for August 9 by H. A. Lane, chief engineer, Baltimore, Md., for furnishing and erecting steel railroad bridge, account of elimination of grade crossings at Salamanca-Ellicottville State Highway 1305 and Rock City Hollow road, Peth, N. Y.

CANADIAN NATIONAL.—A contract has been awarded to F. Mannix, Calgary, Alta., for the construction of water supply facilities at Mirror, Alta., the work involving the building of a reservoir, earth embankments and pipe lines. The total cost of the project, including the contract work

and the work to be done by company forces, will approximate \$40,000.

NATIONAL RAILWAYS OF MEXICO.—A survey for the extension of the southern division of the National Railways of Mexico will be begun immediately by its engineering department to determine the feasibility of constructing of a 500-mile line from a point south of Sarabia, Oaxaca, to Campeche, Campeche. It is estimated that the project will involve an expenditure of approximately 60,000,000 pesos.

STATEN ISLAND RAPID TRANSIT RAILWAY COMPANY (subsidiary of Baltimore & Ohio).—Bids were received by H. A. Lane, chief engineer, Baltimore, Md., August 5, for grading, masonry and other heavy construction in connection with the elimination of grade crossings at Elm Park-Mariners Harbor, Staten Island, N. Y. The probable cost will be about \$650,000.

TOLEDO, PEORIA & WESTERN.—A contract has been awarded the Ross & White Company, Chicago, for an all-steel, 24-ft. diameter, 50,000-gal. tank for hot water storage in connection with locomotive blowdown and refilling operations in the engine terminal at East Peoria, Ill.

Financial

ASHLEY, DREW & NORTHERN.—**R. F. C. Loan Extension**.—The Interstate Commerce Commission, finding that this road is not in need of financial reorganization, has authorized the extension for three years of a \$350,000 loan from the Reconstruction Finance Corporation which matured on August 19. The applicant sought a ten-year extension.

BARTLETT WESTERN.—*Abandonment*.—This company has applied to the Interstate Commerce Commission for authority to abandon its entire line, from Bartlett, Tex., to Florence, 23.2 miles.

BOONVILLE, ST. LOUIS & SOUTHERN.—*Abandonment*.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Boonville, Mo., to Versailles, 43 miles.

CHICAGO & NORTH WESTERN.—*Master in chancery*.—Frank T. Boesel, attorney, was appointed special master in chancery to hear all claims against the North Western, by the federal district court at Chicago on August 3, the selection being made from a panel of lawyers approved by the United States circuit court of appeals.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Abandonment*.—Examiner J. S. Prichard, of the Interstate Commerce Commission, has recommended in proposed reports that the commission authorize the abandonment of branch lines from McCaysburg, Ind., to Dinwiddie, 35.9 miles, and from Avoca, Ind., to Switz City, 33.75 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Hearing on Reorganization Plan*.—

A hearing on the reorganization plan proposed by the company on July 1 and submitted to the Interstate Commerce Commission was begun at Washington on August 5 before O. E. Sweet, director of the commission's Bureau of Finance, and Commissioner Porter. Robert T. Swaine, counsel for the company, outlined the plan and the reasons for various provisions and also submitted some modifications as to details. He was followed by W. W. K. Sparrow, vice-president, who gave an analysis of the company's earnings and estimates for the future in relation to the plan, and H. A. Scandrett, who gave a detailed outline of the recent history of the company's operations and the efforts made to avoid bankruptcy. Mr. Swaine said it had been decided it would not be in the best interest to attempt a reorganization on the basis of the present earnings and that the basis of the last three years would have meant the complete elimination of the stockholders, who were believed to have a potential equity in the property of about \$180,000,000 on the basis of I. C. C. valuations. The effort had been made, he said, to preserve to the stockholders some opportunity to share in any ultimate prosperity of the company, and to reduce the fixed charges to \$6,000,000, but this had seemed too drastic and the plan proposes to reduce them to about \$7,500,000. This is accomplished in part by making a part of the bond interest contingent for ten years. Mr. Swaine said the plan advanced is "fair and equitable," but that whether it would produce a sound financial structure would depend on the future earnings of the company. When Mr. Sweet asked if it would not be feasible to make a further reduction in fixed charges, Mr. Sparrow said that if the road could not earn those proposed in the plan "it might as well be turned over to the government." Mr. Scandrett described the various meetings and conferences held to consider the situation of the company and said that several plans of reorganization were discussed in March. Decision to file a petition in bankruptcy was reached at the board meeting on June 27. A committee representing bondholders of the company has filed a protest against the plan, stating that it "makes another receivership in a few years inevitable."

CHICAGO, ROCK ISLAND & PACIFIC.—Reorganization.—The Rock Island, on August 6, was ordered to appear before Federal Judge James H. Wilkerson at Chicago on September 17, to show cause why an order should not be entered by the court requiring the carrier to present a plan of reorganization on November 1. Upon failure to do so, the court will take further action on such premises as it may deem advisable. The road petitioned to reorganize under the amended bankruptcy act in June, 1933.

COLORADO & SOUTHERN.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Connors, Colo., to Falcon, 65.16 miles.

GREAT NORTHERN.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon two branch lines extending

from St. John and Walhalla, N. D., to the international boundary line, 3.55 and 4.36 miles.

KANSAS CITY & WESTPORT BELT.—Proposed Operation.—The Interstate Commerce Commission has affirmed the November 5, 1934, order of its division 4, denying the application of this company for authority to acquire control by lease of certain tracks and to operate under trackage rights over other tracks of the Kansas City Public Service Company. The purpose of the application was to effect an arrangement which would clarify uncertainties concerning the jurisdiction of the Interstate Commerce Commission and state commissions over the properties of the Kansas City Public Service Company, the plan being to transfer the freight activities of the latter to the applicant which then would come under the jurisdiction of the I. C. C., leaving the Service company's street, suburban and interurban electric railways under the jurisdiction of the state commissions. Commissioner Porter filed a dissenting opinion in which Commissioner Aitchison joined; Chairman Tate and Commissioners Lee and Mahaffie did not participate in the disposition of the case.

KANSAS CITY SOUTHERN.—Acquisition.—The Interstate Commerce Commission has authorized this company to acquire the properties of the Kansas City, Shreveport & Gulf.

LOS ANGELES JUNCTION.—Lease of the Central Manufacturing District.—The Interstate Commerce Commission has approved conditionally the execution by this road of a new lease for the line of the Central Manufacturing District, Inc. In order, however, that the new lease may not hinder the carrying out of the commission's consolidation plan, an order in the proceeding has been deferred pending the acceptance by the applicant of the condition that the lease shall be subject to cancellation within such period as the commission may prescribe in any further order.

MINNEAPOLIS & ST. LOUIS.—Abandonment.—The receivers have applied to the Interstate Commerce Commission for authority to abandon 125 miles of branch line in Iowa, from G. & M. Junction to Montezuma, 13.6 miles; from Angus to Kalo Junction, 44 miles; from Algoma to Corwith, 15.1 miles; from Newburg to Van Cleve, 16.1 miles, and from Spencer to Storm Lake, 36.9 miles.

NEW YORK CENTRAL.—Abandonment.—The Interstate Commerce Commission has granted the joint application of this road and the Battle Creek & Sturgis for permission to abandon approximately 40.03 miles of the latter's 41.4-mile line extending from Battle Creek, Mich., to Sturgis.

NEW YORK CENTRAL.—Acquisition of the Chicago, Attica & Southern.—The Interstate Commerce Commission, modifying previous conclusions in the matter, has extended conditionally the time in which this road is required to acquire the Chicago, Attica & Southern in accordance with the commission's findings in the New York Central unification case. The present decision follows a rehearing of the New

York Central's *pro forma* application for authority to acquire and operate the lines of the Attica and the commission now finds that the application should be dismissed if the applicant agrees that it will offer to acquire the Attica at a price of \$110,000, adjusted for any change in the Chicago price of heavy steel melting scrap from June 30, 1933, to the time of the acquisition, at a future date not later than the Central's next declaration of dividends on its capital stock; and that, in the event of abandonment of the Attica before that time, the Central will undertake to adjust certain rates in such a way that shippers will enjoy the same rates as are now available to them over the Attica. Commissioner Lee, dissenting, declared that the "acquisition by the Central of the Attica would impose a burden on interstate commerce that greatly outweighs any local benefit to be derived therefrom" and he therefore held that "the Central should be released from the requirement that it acquire and operate the Attica and the pending application should be denied." Commissioners Aitchison and Porter also dissented while Chairman Tate and Commissioner Mahaffie did not participate in the case.

NEW YORK, CHICAGO & ST. LOUIS.—Notes.—This company has applied to the Interstate Commerce Commission for authority to issue \$15,000,000 of new or extended promissory three-year notes at 6 per cent to be used to meet a \$15,000,000 maturity on October 1.

NORTHERN PACIFIC.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Centerville, Mont., to Walkerville, 4 miles.

PENNSYLVANIA.—R. F. C. Offers Equipment Trust Certificates.—The Reconstruction Finance Corporation has announced that it will receive bids up to noon on August 15 on \$15,282,000 of Pennsylvania 4 per cent equipment trust certificates, Series E, which it has recently purchased from the Public Works Administration.

WESTERN PACIFIC.—Reorganization Plan Filed with I. C. C.—This company, which last week filed a petition under the federal bankruptcy act in the United States district court for the northern district of California on August 3 filed with the Interstate Commerce Commission a plan of reorganization proposing to reduce its capitalization from \$147,240,343 to \$75,648,954 and 300,000 shares of no-par stock and to reduce the fixed charges from \$3,177,302 to \$1,027,036. The plan has been under discussion for months with the Reconstruction Finance Corporation.

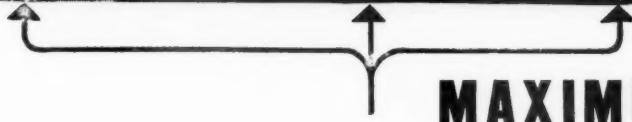
Dividends Declared

Boston & Providence.—\$2.12½, quarterly, payable October 1 to holders of record September 20. **Cleveland & Pittsburgh.**—7 Per Cent Guaranteed, 87½c, quarterly; Special Guaranteed, 50c, quarterly, both payable September 1 to holders of record August 10.

Average Prices of Stocks and of Bonds

	Aug. 6	Last week	Last year
Average price of 20 representative railway stocks..	35.54	35.60	33.71
Average price of 20 representative railway bonds..	74.36	74.82	73.93

Continued on next left-hand page



**MAXIMUM POWER
Applied at the "POWER POINTS"
Insures Maximum Output from the
Entire Transportation Plant**

Modern locomotives deliver 1200 horsepower per axle while locomotives 10 years old and over deliver but 600 horsepower per axle. » » » Doubling the power at the "Power Points" doubles the gross ton-miles per train hour. » » » Only by using locomotives that apply maximum power at the "Power Points" can you get full output from the transportation plant.



LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

Railway Officers

EXECUTIVE

L. T. Nichols, superintendent of the Carolina & Northwestern, with headquarters at Chester, S. C., has been appointed assistant to vice-president, with the same headquarters.

E. M. Whittle, general manager, Western departments, of the Railway Express Agency, whose appointment as vice-president, Western departments, with headquarters at San Francisco, Cal., was noted in the *Railway Age* of July 13, was born on July 12, 1870, at Chicago. He entered the service of the American Express Company (now Railway Express Agency) in January, 1902, as chief clerk to the general agent at Chicago, being appointed assistant general agent, with headquarters at St. Louis, Mo., in January, 1904. In the following year, Mr. Whittle was advanced to general agent at Pittsburgh, Pa., and five years later he was transferred to Portland, Ore. In January, 1911, he was further advanced to superintendent at Portland, and in January, 1915, he was appointed manager at Salt Lake City, Utah. In July, 1918, he was further promoted to general manager at Seattle, Wash., being transferred to Los Angeles, Cal., in April, 1934. Mr. Whittle was holding the latter position at the time of his recent appointment as vice-president at San Francisco.

FINANCIAL, LEGAL AND ACCOUNTING

Frank F. Kehr, assistant general paymaster of the Delaware, Lackawanna & Western, has been appointed general paymaster, with headquarters at Scranton, Pa., succeeding the late **Arthur Wilson**.

W. C. Doudna has been appointed general auditor of the Southern Pacific of Mexico, with headquarters at Guadalajara, Jal., succeeding **W. T. Pyott**, resigned. **H. Oberfeld** has been appointed assistant general auditor.

OPERATING

S. M. Percival has been appointed assistant superintendent of the High Point, Randleman, Asheboro & Southern and the Yadkin, with headquarters at Salisbury, N. C.

Samuel A. Towne, trainmaster of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Enderlin, N. D., has been promoted to assistant superintendent of the Minnesota division, with the same headquarters.

W. J. O'Pry, superintendent of the Danville & Western, with headquarters at Danville, Va., has been appointed superintendent of the High Point, Randleman, Asheboro & Southern, with the same headquarters. He succeeds **William M. Archer**, who has been appointed superin-

tendent of the Carolina & Northwestern, with headquarters at Hickory, N. C., succeeding **L. T. Nichols**, promoted.

W. A. Hurley, whose appointment as superintendent of the Boston division of the New York, New Haven & Hartford was noted in the *Railway Age* of July 27, was born on August 15, 1889, and entered the service of the New York, New Haven & Hartford in November, 1909, as a loco-



W. A. Hurley

motive fireman. Mr. Hurley was promoted to engineer in January, 1918, and in 1923 he became smoke inspector. In 1924 Mr. Hurley was appointed road foreman of engines and became assistant trainmaster of the Boston division in 1925. He was appointed assistant superintendent of the Boston division at Boston in 1927 and was later transferred to the Old Colony division at Taunton, Mass., to the Midland division at Framingham, Mass., and in 1931 he returned to Boston.

TRAFFIC

F. F. Crabbe has been appointed general agent of the Chicago, Burlington & Quincy, with headquarters at Washington, D. C.

G. H. Rehm has been appointed assistant general freight agent of the Colorado & Southern, with headquarters at Denver, Colo.

E. T. Gillooley, whose appointment as general passenger agent for the Delaware & Hudson at Albany, N. Y., was noted in the *Railway Age* of August 3, was born at Albany on July 1, 1894. Mr. Gillooley was educated in the public schools of Albany and in July, 1912, he entered the service of the Delaware & Hudson as extra clerk in the office of the auditor of revenue. He was transferred as rate clerk to the office of the general passenger agent in August, 1915. In December, 1917, Mr. Gillooley became chief rate clerk in the passenger department, which position he held until March, 1920, when he was appointed traveling passenger agent at New York. He was transferred to Albany as traveling passenger agent in September, 1922, and in December, 1931, he was appointed general agent, passenger department, which position he held until his re-

cent appointment as general passenger agent.

ENGINEERING AND SIGNALING

F. J. Hoffman, general maintenance inspector of the Chicago Great Western, has been appointed division engineer of the Illinois-Iowa division, with headquarters at Oelwein, Iowa, succeeding **F. U. Mayhew**, who has been assigned to other duties.

MECHANICAL

B. C. King, assistant general boiler inspector on the Northern Pacific, with headquarters at Auburn, Wash., has been appointed general boiler inspector with system jurisdiction and headquarters at St. Paul, Minn., succeeding **J. J. Davey**, who has retired after 49 years of continuous service with this road.

OBITUARY

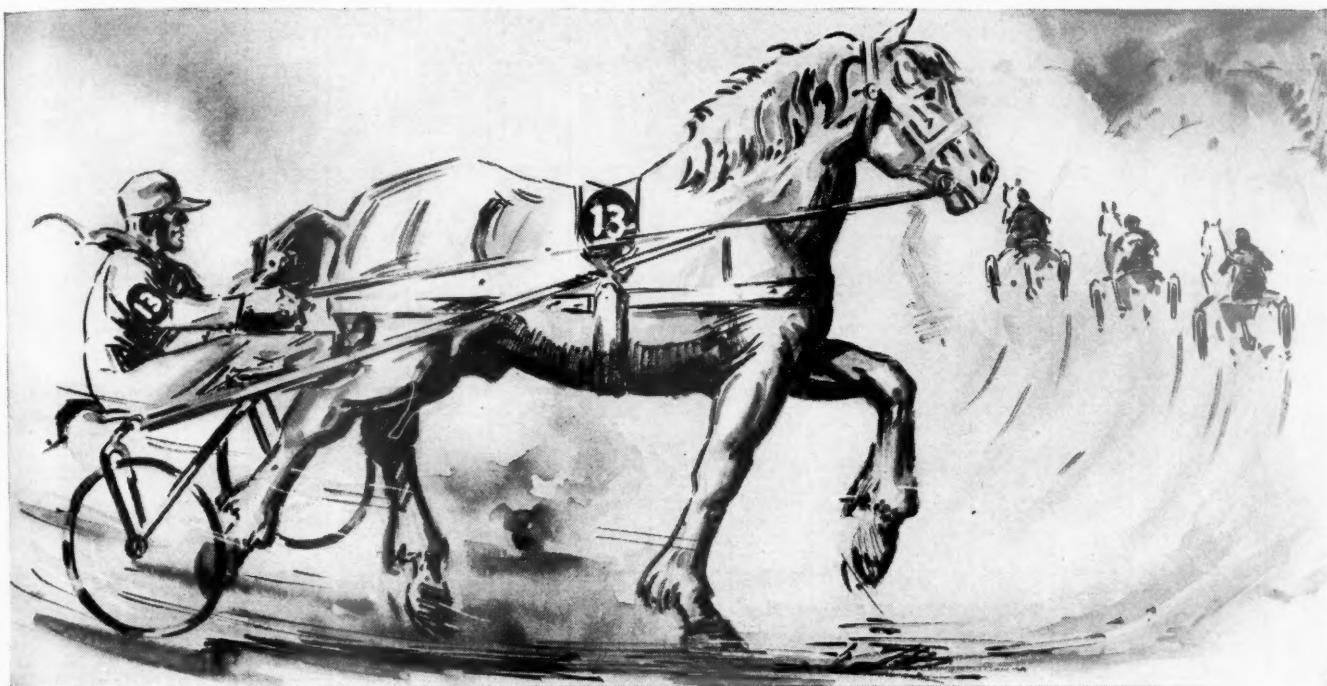
R. B. Rasbridge, who retired as superintendent of the car department of the Reading in 1932, died on August 2.

C. E. Daymude, at one time import and export agent of the Great Northern, with headquarters at Seattle, Wash., died in that city on July 25.

Frank C. Shepherd, consulting engineer of the Boston & Maine, with headquarters at Boston, Mass., died on August 6 at his home in Chestnut Hill, Boston. Mr. Shepherd was 64 years old.

Frank H. Rutherford, superintendent of the Chicago terminal of the Chicago & Eastern Illinois, died on July 31 of heart disease. Mr. Rutherford had been connected with the C. & E. I. continuously for 43 years. He was born on August 29, 1872, at Morris, Ill., and entered railway service with the C. & E. I. in 1892 as a telegraph operator. Seven years later he was appointed chief clerk to the general superintendent and in 1906 he was appointed superintendent of the Chicago terminal, which position he was holding at the time of his death.

MEALS ARE NOW AVAILABLE in coaches on a large number of the Southern's local and through passenger trains, breakfast, lunch and dinner being served at a uniform price of 50 cents a meal. Varied bills of fare are provided, and the food is served on trays to passengers as they sit in their seats. This service is being tried on the following trains: Nos. 9-10 and 27-28, between Columbia, S. C., and Spartanburg; Nos. 15 and 16, between Salisbury, N. C., and Asheville; Nos. 25 and 26, between Charlottesville, Va., and Chattanooga, Tenn.; Nos. 28-22 and 21-27, between Knoxville, Tenn., and Statesville, N. C.; Nos. 31 and 32, between Charlotte, N. C., and Columbia; Nos. 35 and 36, between Washington, D. C., and Spartanburg; No. 40, between Atlanta, Ga., and Charlotte; Nos. 1 and 2, between Chattanooga and Jacksonville, Fla., and Nos. 3 and 4 between Cincinnati, Ohio, and Atlanta.



ARE YOU RACING WITH TRUCK HORSES?

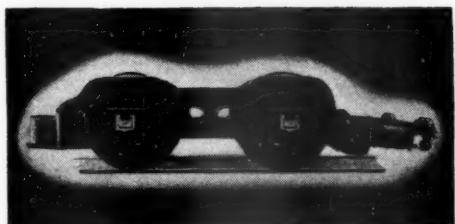
Don't buy a "truck-horse" locomotive to compete in the race for railroad traffic.

You need light weight for speed and economy.

Booster-equipped locomotives give greater power per pound of weight. The Booster avoids hauling excess weight that is only used infrequently, yet costs more

to buy and maintain.

Build the Locomotive Booster into the new power to get the qualities you need for high speed, low cost transportation.



No locomotive device is better than the replacement part used for maintenance. Genuine Franklin repair parts assure accuracy of fit and reliability of performance.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK

CHICAGO

MONTRÉAL

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1935

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Net railway operating income			Net railway operating income, 1934
		Freight	Passenger	Total	Way and equipment structures	Traffic	Transportation	General	Total	Operating ratio	
Akron, Canton & Youngstown	6 mos.	\$171	\$39	\$142,858	\$31,757	\$8,316	\$46,453	\$49,139	\$107,455	75.2	\$14,151
Alton	6 mos.	171	925,036	120,844	927,225	49,845	319,031	68,226	66.3	328,999	\$25,949
Atlanta, Birmingham & Coast	6 mos.	949	795,304	144,575	1,105,191	341,551	190,611	45,424	1,104,497	66.3	189,148
Atlanta, Topka & Santa Fe System	6 mos.	949	4,653,560	802,797	1,200,287	275,767	270,082	273,375	5,649,109	66.3	201,466
Atlanta & West Point	6 mos.	93	49,777	113,651	227,043	112,460	152,426	42,963	315,569	88.0	56,942
Western of Alabama	6 mos.	133	73,920	19,957	105,832	25,363	32,213	7,139	48,053	56,660	22,575
Atlanta, Birmingham & Coast	6 mos.	133	441,588	114,163	647,626	131,936	181,674	40,795	285,030	35,835	62,439
Charleston & Western Carolina	6 mos.	639	1,230,047	40,711	1,447,580	40,362	45,549	22,998	96,909	68,017	33,547
Atlantic Coast Line	6 mos.	5,147	2,481,868	1,618,316	61,623,627	8,250,466	15,716,535	2,651,223	3,900,483	4,427,747	1,102,210
Charleston & Western Carolina	6 mos.	5,147	15,686,517	3,639,124	22,993,860	5,386,723	15,064,979	2,211,336	51,431,491	51,431,417	4,728,250
Baltimore & Ohio	6 mos.	6,439	10,516,666	4,706,495	905,161	12,131,850	1,045,026	2,512,907	383,559	4,090,482	1,860,957
Staten Island Rapid Transit	6 mos.	6,440	59,806,547	3,639,124	75,590	68,996,170	2,651,223	15,064,979	2,211,336	51,431,491	51,431,417
Bangor & Aroostook	6 mos.	23	244,445	1,031	1,037,969	731,048	14,725	14,231	1,650	804,890	16,882,326
Bessemer & Lake Erie	6 mos.	603	356,563	11,873	168,482	3,827,042	5,875	73,030	477,750	860,943	11,549,947
Boston & Maine	6 mos.	2,016	2,542,809	3,672,691	3,641,547	3,672,691	413,128	598,731	1,419,188	1,419,188	2,846,181
Brooklyn Eastern District Terminal	6 mos.	2,030	15,396,724	10,91	84,983	3,349,072	2,651,335	3,499,292	8,972,572	1,038,837	11,256,598
Burlington-Rock Island	6 mos.	280	345,755	20,282	102,440	10,042	10,587	287	24,096	44,796	11,577,858
Cambria & Indiana	6 mos.	37	102,440	558,844	559,742	102,595	6,962	3,344	70,054	12,706	3,375,034
Canadian Pacific Lines in Maine	6 mos.	233	923,472	17,177	109,242	37,751	57,611	18,448	44,422	64,817	1,691,112
Canadian Pacific Lines in Vermont	6 mos.	85	52,231	10,042	75,492	10,042	16,097	87,475	25,513	244,126	2,676,474
Central of Georgia	6 mos.	1,926	5,553,842	619,055	7,054,664	924,423	1,544,561	54,952	415,362	94,771	1,691,112
Central of New Jersey	6 mos.	684	2,111,277	375,422	2,660,515	179,536	57,265	1,036,930	322	13,133	1,195,443
Central Vermont	6 mos.	85	341,884	52,860	465,116	73,758	129,033	24,497	35,579	56,390	1,691,112
Chicago & Eastern Illinois	6 mos.	938	435,919	33,904	515,394	95,267	87,946	14,199	194,033	20,871	46,147
Chicago & Illinois Midland	6 mos.	938	5,196,940	488,618	6,493,072	800,664	1,124,483	309,146	42,097	419,541	87,732
Chicago, Burlington & Quincy	6 mos.	131	2,172,826	201,736	2,629,939	391,253	551,677	80,746	1,231,731	106,935	2,171,767
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	1,511	6,416,899	239,916	4,667,305	6,430,305	1,243,037	57,521	171,035	1,532,114	2,226,178
Chicago, Indianapolis & Louisville	6 mos.	647	5,666,973	1,390,211	54,596,276	1,627,033	189,874	342,496	86,086	325,024	1,019,329
Chicago Great Western	6 mos.	8,428	4,921,129	89,175	992,722	149,470	50,770	1,672,372	157,148	2,448,481	1,690,024
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	9,036	2,174,336	4,231,194	35,386,728	1,619,604	5,369,330	8,188,816	956,754	2,448,481	1,690,024
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	9,036	4,727,867	575,278	6,097,554	1,552,062	1,288,000	2,476,088	287,419	5,251,916	1,690,024
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	9,036	2,948,878	3,857,475	36,667,534	5,336,135	7,671,116	1,338,682	14,507,338	1,708,770	30,937,024
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	11,125	5,685,522	573,906	7,064,171	2,173,374	1,543,457	53,269	475,198	81,0	62,905
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	11,125	34,531,657	2,517,382	41,392,136	6,078,555	1,194,339	1,078,320	324,720	3,002,936	1,103,604
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	11,125	34,531,657	6,416,899	7,188,555	1,078,320	1,194,339	1,078,320	324,720	3,002,936	1,103,604
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	7,575	3,817,908	3,396,365	6,884,963	7,052,278	1,078,320	1,194,339	1,078,320	324,720	3,002,936
Chicago, Milwaukee, St. Paul & Pacific	6 mos.	7,575	2,800,200	29,521,884	3,543,188	6,732,295	879,857	1,194,339	1,078,320	324,720	3,002,936

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Measure Security Arch Service

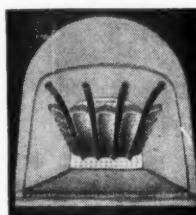
- *in fuel saved*
- *in thousands*
- *of ton miles*

Either measure will show that Security Brick Arches are rendering greater service at lower costs than when locomotive service was less severe.

Security Arch Brick have been constantly improved to anticipate the requirements of modern locomotive operation.

There's more to SECURITY ARCHES than just brick

**HARBISON-WALKER
REFRACTORIES CO.**
Refractory Specialists



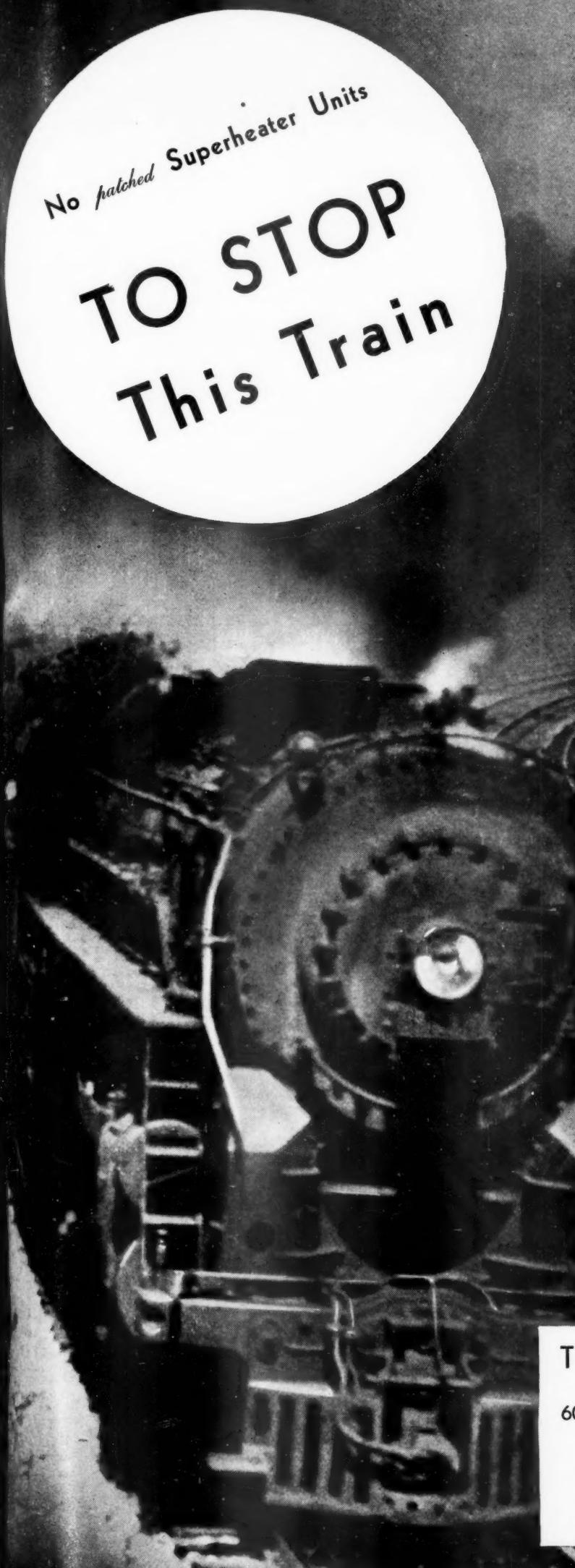
**AMERICAN ARCH CO.
INCORPORATED**
*Locomotive Combustion
Specialists* * * *

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1935—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues			Maintenance of equipment			Operating expenses			Net railway operating income				
		Passenger	Freight	Total	Way and structures	Traffic	Transportation	General	Total	Operating ratio	Operating income	Net railway operating income			
Chicago, Rock Island & Gulf.....	722	\$301,559	\$21,557	\$327,153	\$48,238	\$15,819	\$115,402	\$21,310	\$236,909	70.3	\$100,244	\$82,524	\$12,398		
Chicago, 6 mos.	722	1,605,800	135,284	1,812,956	241,155	195,390	704,414	30,828	1,383,110	76.3	429,846	322,705	—105,340		
Chicago, St. Paul, Minn. & Omaha	1,653	905,533	138,951	1,148,394	160,000	37,445	73,146	67,267	1,125,556	98.1	—45,924	158,861	—135,100		
Colorado & Southern.....	1,653	5,449,065	735,703	6,727,726	811,213	1,160,865	194,125	3,521,494	6,135,682	91.2	592,044	158,861	—322,589		
Clinchfield R. R.	6 mos.	309	2,536,862	21,581	2,589,359	220,451	104,210	12,491	2,454,377	655,852	16,461	1,005,116	771,167	1,229,109	
Colorado & Southern.....	6 mos.	1,019	2,219,076	129,815	2,621,280	429,124	596,446	73,839	1,135,700	83,639	1,135,818	185,200	—145,191	—224,663	
Ft. Worth & Denver City.....	6 mos.	804	1,260,578	183,375	2,322,626	260,642	450,996	98,200	925,466	1,941,532	85.7	55,492	26,215	—4,005	
Columbus & Greenville.....	6 mos.	167	348,547	57,926	69,559	11,552	4,275	129,661	129,661	93,34	381,094	208,272	—47,543	624,413	
Delaware & Hudson.....	6 mos.	835	1,901,682	71,680	2,062,879	280,870	485,426	53,015	733,017	1,701,047	82.5	361,832	273,760	165,531	
Delaware, Lackawanna & Western.....	6 mos.	835	10,870,939	471,862	11,862,699	1,603,232	3,091,384	289,066	1,433,966	10,171,776	85.8	1,688,923	1,627,473	1,369,576	
Denver & Rio Grande Western.....	6 mos.	992	2,813,244	548,012	3,826,915	514,635	706,322	127,158	1,672,908	83.8	619,150	302,983	298,971	570,535	
Denver & Salt Lake.....	6 mos.	992	17,067,879	3,152,233	2,281,151	1,981,840	4,347,712	691,365	10,366,357	995,188	81.0	4,337,158	2,371,067	2,317,572	2,973,272
Detroit & Mackinac.....	6 mos.	2,584	1,240,762	103,863	1,453,506	279,389	457,379	51,619	507,791	82,625	95.6	63,222	87,350	—126,405	
Detroit & Toledo Shore Line.....	6 mos.	2,601	1,345,564	41,457	14,797	8,779,585	1,077,511	1,795	3,107,126	40,790	84.4	1,373,745	457,809	55,530	
Detroit, Toledo & Ironton.....	6 mos.	472	476,438	174	427,669	4,717,927	430,001	562,781	9,645	2,074,840	96,920	66.0	49,908	23,268	
Duluth, Missabe and Northern.....	6 mos.	560	465,910	1,592	2,360	1,910,019	160,988	3,488	273,882	35,503	96.9	33,908	82,347	40,333	
Duluth, Winnipeg & Pacific.....	6 mos.	560	1,691,314	19,360	1,730,667	1,713,106	1,006,656	19,963	1,069,233	179,896	71.7	521,186	210,320	470,494	
Elgin, Joliet & Eastern.....	6 mos.	446	6,175,470	12,256	2,271,50	2,474,420	301,219	1,795	3,107,905	57,839	52.8	296,325	210,320	122,005	
Erie Railroad.....	6 mos.	2,304	5,376,041	431,812	2,377,040	36,339,976	1,199,167	9,113	5,224	124,876	21,900	50,362	70.6	—1,067	
New Jersey & New York.....	6 mos.	45	20,267	47,635	6,377	39,780	34,726	6,377	27,552	7,207	63,041	7,251	12,405		
N. Y., Susquehanna & Western.....	6 mos.	215	285,453	25,549	493,764	81,907	129,964	92,458	1,144,272	114,272	84.4	4,432	1,383	—12,499	
Florida East Coast.....	6 mos.	811	1,639,155	149,480	1,891,138	149,344	326,129	28,619	63,985	895,102	80.7	2,074,292	2,074,292	—3,904	
Fort Smith & Western.....	6 mos.	329	227,306	69,395	131,117	111,909	131,117	19,643	4,007,79	409,79	78.7	1,262,911	1,262,911	1,262,911	
Georgia & Florida.....	6 mos.	1,335,992	1,41,139	4,989,917	745,280	846,146	1,106	1,106	13,703,204	1,750,296	72.6	1,752,579	1,13,686	1,130,197	
Grand Trunk Western.....	6 mos.	408	94,157	291,840	397,830	34,726	1,795	6,377	142,524	18,534	49,557	124.6	—97,727	—122,636	
Great Northern.....	6 mos.	1,006	1,562,598	11,611	1,739,351	1,257,908	2,105,562	62,592	292,624	18,534	495,557	124.6	—97,727	—218,852	
Canadian Nat'l Lines in New Eng.....	6 mos.	172	68,603	7,344	83,668	31,820	27,283	14,118	8,583	4,883	18,718	50,350	111.5	—5,198	
Great Northern.....	6 mos.	8,282	5,197,157	446,098	30,248	52,182	147,171	132,188	14,936	3,488	124,223	148.6	—40,655	—66,717	
Green Bay & Western.....	6 mos.	234	93,750	1,009	99,436	22,412	18,502	5,723	38,500	—1,301	52,155	10,501	7,530	—3,530	
Gulf & Ship Island.....	6 mos.	259	79,513	6,055	68,098	9,239	7,976	3,148	31,486	54,294	101.6	—47,121	—14,672	—24,824	
Gulf, Mobile & Northern.....	6 mos.	936	446,707	19,495	490,471	53,567	68,228	46,736	38,632	152,151	80.1	2,439,461	1,942,846	1,942,846	
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No patched Superheater Units

TO STOP
This Train

When the superheater units on this locomotive,

after many years of service became worn and

unserviceable, they were REmanufactured by the

Elesco unit REmanufacturing service . . . made

just like new not merely patch-repaired

with the threat of service failures.

Protect your train schedules by standardizing on

Elesco unit REmanufacturing service.

THE SUPERHEATER COMPANY

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building CHICAGO

Canada: The Superheater Company, Limited, Montreal

A-1003

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1935—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues		Maintenance of equipment		Operating expenses		Operating ratio	Net from railway operating income
		Freight	Pasenger (inc. misc.)	Traffic	Transportation	General	Total		
Yazoo & Mississippi Valley	1,635 6 mos.	\$80,274 4,773,585	\$63,075 \$1,005,911	\$187,141 1,059,094	\$27,073 180,444	\$401,370 301,439	\$1,199,222 805,595	76.2 80.5	\$229,243 \$1,088,301
Illinois Central System	6,616 6 mos.	6,554,068 38,347,337	693,343 7,902,858	875,530 1,840,424	208,820 2,969,444	2,969,444 3,895,825	6,318,114 7,325,685	79.9 79.5	1,554,744 1,021,458
Illinois Terminal	6,616 6 mos.	5,102,237 6 mos.	525 525	404,595 358,294	17,222 25,578	144,954 48,494	16,603 55,331	73.82 70.02	105,939 142,231
Kansas City Southern	6,616 6 mos.	678,979 3,959,848	19,719 106,317	79,834 4,631,394	10,744,609 470,201	1,387,725 826,794	2,305,157 1,568,525	79.8 77.5	577,814 634,342
Kansas, Oklahoma & Gulf	6 mos.	139,714 907,689	326 160	404 2,287	142,767 92,513	29,402 34,023	16,510 22,583	68.0 58.5	45,679 384,554
Lake Superior & Ishpeming	6 mos.	190,223 528,158	160 607	217,415 142,221	215,169 150,190	3,703 3,703	6,536 6,225	45.5 49.5	118,553 100,049
Lehigh & Hudson River	6 mos.	137,495 760,104	226 77	138,527 76,956	19,426 125,315	19,078 12,071	3,160 2,651	72.63 76.5	243,082 1,266,720
Lehigh & New England	6 mos.	398,785 1,770,800	243 1,638	401,492 1,785,045	39,343 349,580	30,276 33,218	5,835 6,325	60.5 67.0	147,618 158,478
Lehigh Valley	6 mos.	3,160,661 1,354,228	1,184,223 1,134,228	3,601,809 3,637,060	610,784 3,625,311	111,105 66,194	1,486,393 9,167,251	74.2 75.2	928,533 5,019,252
Louisiana & Arkansas	6 mos.	18,262,171 3,59,814	608 608	19,412 2,01,227	20,742 384,950	3,625,311 5,53,276	6,536 3,59,59	66.1 108,108	3,904,334 3,30,554
Louisiana & Arkansas & Texas	6 mos.	1,056,227 5,048	255 5,048	1,245 453,563	20,990 463,066	49,774 42,542	27,731 21,81,116	69.0 75.4	27,323 1,489,862
Louisville & Nashville	6 mos.	2,747,667 30,496,084	2,747,667 36,33,383	4,017,852 4,017,852	7,977,542 1,032,219	1,032,219 13,262,376	2,65,997 1,624,296	77.4 28,136,557	6,200,935 6,265,658
Maine Central	6 mos.	1,052,487,040 84,152	1,052 361	1,245,437 562,331	117,694 1,570,742	1,77,415 73,533	170,052 66,195	128,114 812,561	157,227,996 1,25,034
Midland Valley	6 mos.	1,052,487,040 84,152	361 361	1,245,437 562,331	117,694 1,570,742	1,77,415 73,533	170,052 66,195	128,114 812,561	157,227,996 1,25,034
Minneapolis & St. Louis	6 mos.	11,647 3,052,563	11,647 3,339,364	11,754 3,339,364	96,754 410,708	177,415 73,533	273,533 20,55,229	32,938 2,219,566	329,888 2,219,582
Louisiana, Arkansas & Texas	6 mos.	93,882 5,175,414	255 5,048	190 453,633	20,990 6,054,623	49,774 1,66,560	27,731 2,181,116	66,511 4,564,729	75.4 75.4
Louisville & Nashville	6 mos.	2,747,667 30,496,084	2,747,667 36,33,383	4,017,852 4,017,852	7,977,542 1,032,219	1,032,219 13,262,376	2,65,997 1,624,296	77.4 28,136,557	6,200,935 6,265,658
Maine Central	6 mos.	1,052,487,040 84,152	1,052 361	1,245,437 562,331	117,694 1,570,742	1,77,415 73,533	170,052 66,195	128,114 812,561	157,227,996 1,25,034
Midland Valley	6 mos.	1,052,487,040 84,152	361 361	1,245,437 562,331	117,694 1,570,742	1,77,415 73,533	170,052 66,195	128,114 812,561	157,227,996 1,25,034
Minneapolis, St. Paul & Sault Ste. Marie	6 mos.	1,647 3,052,563	1,647 3,339,364	1,647 3,339,364	96,754 410,708	177,415 73,533	273,533 20,55,229	32,938 2,219,566	329,888 2,219,582
Minneapolis, St. Paul & Sault Ste. Marie, International	6 mos.	1,647 3,052,563	1,647 3,339,364	1,647 3,339,364	96,754 410,708	177,415 73,533	273,533 20,55,229	32,938 2,219,566	329,888 2,219,582
Duluth, South Shore & Atlantic	6 mos.	217,722 556	202,200	254,165 1,084,501	27,384 150,793	70,937 3,277,793	4,249 59,283	5,697 777,355	558,137 110,264
Duluth, South Shore & Atlantic, International	6 mos.	217,722 556	202,200	254,165 1,084,501	27,384 150,793	70,937 3,277,793	4,249 59,283	5,697 777,355	558,137 110,264
Spokane International	6 mos.	4,297 8,998,395	1,63 10,52,343	5,453,563 10,52,343	1,049 1,570,742	5,453,544 2,203,153	1,811 3,459,925	1,811 4,809,161	82.0 941,413
Missouri-Illinois	6 mos.	61,529 929,166	208 12,097	58,842 1,084,501	11,430 150,793	6,209 3,277,793	2,839 3,277,793	10,125 19,225	14,347 244,614
Missouri-Kansas-Texas Lines	6 mos.	316,263 9,761,321	150 3,293	317,771 12,097	44,646 1,049	6,209 5,454	2,839 1,811	10,125 1,811	14,347 244,614
Missouri Pacific	6 mos.	61,529 929,166	208 12,097	58,842 1,084,501	11,430 150,793	6,209 3,277,793	2,839 3,277,793	10,125 19,225	14,347 244,614
Mississippi Central	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri Central	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	174 1,201	4,72,658 4,774,213	3,904,403 1,90,709	5,718,557 5,16,679	1,350,008 1,02,027	27,705 17,892	84.2 107,648
Missouri, Kansas-Texas Lines, International, International, International, International	6 mos.	4,72,658 4,774,213	1						

FAITH JUSTIFIED

The "Hiawatha" in June carried a total of 16,564 paying passengers, an average of 552 a day.

On June 15th, 405 passengers were carried on the northbound run and 326 on the southbound run.

On June 29th, 500 passengers were carried on the northbound run and 408 on the southbound run.

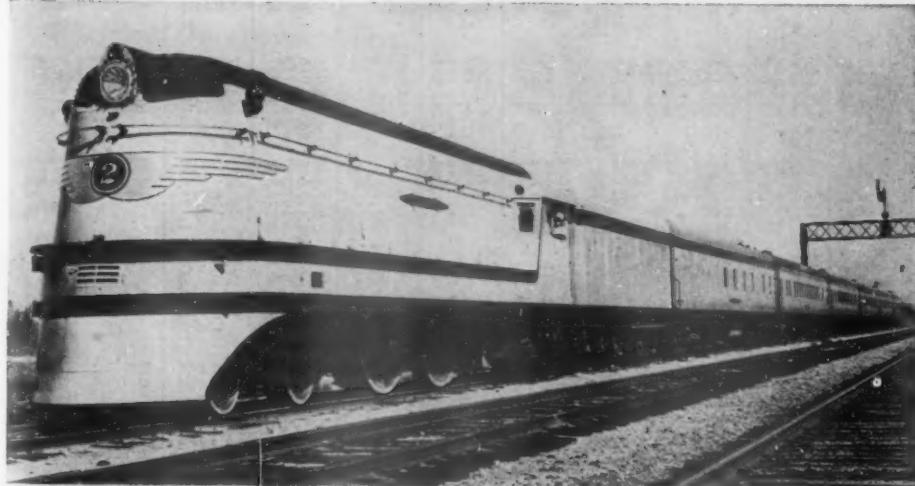
Business in the second half of the month was 23 per cent greater than in the first half.

The locomotive maintained the same exacting schedule with ease throughout the whole month.

The "Hiawatha" was built to induce the traveling public again to patronize the railroad. Faith in its ability to create this incentive was such that it also was given capacity sufficient to earn a handsome return on the initial investment.

Five hundred passengers on one train should make any passenger traffic official in the country sit up and take notice.

AMERICAN LOCOMOTIVE COMPANY



50 CHURCH STREET NEW YORK N.Y.

ALO

Revenues and Expenses of Railways

Month of JUNE AND Six Months of CALENDAR Year 1935—CONTINUED

Name of road	Av. mileage operated during period			Operating revenues—			Operating expenses—			Net from railway operating income		
	Freight	Passenger (inc. misc.)	Total	Maintenance of Way and Equipment	Traffic	Transportation	General	Total	Operating ratio	Operating income	Net railway operating income	Net railway operating income
Nashville, Chatt. & St. Louis..... June 1,184	\$72,578	\$2,393	\$74,971	\$1,442,444	\$1,349,067	\$25,281	\$60,008	\$42,742	90.700	\$91,744	-\$1,415	-\$1,415
6 mos. 1,188	4,980,623	4,381,149	5,366,772	82,0,923	61,731,76	1,532,269	353,566	546,446	533,121	561,088	55,088	181,964
Nevada Northern..... June 165	165	22,424	536	8,793	8,793	3,487	6,608	2,421	22,097	81,6	4,986	2,763
6 mos. 165	144,163	4,777	176,590	53,045	19,100	4,429	46,764	22,347	145,685	82,5	30,905	-\$7,827
New York Central..... June 11,364	17,280,699	4,895,022	20,565,411	13,974,320	13,375,211	511,921	57,368,468	115,074,564	76,4	35,450,758	2,578,863	3,129,715
Pittsburgh & Lake Erie..... June 233	1,376,149	40,960	1,460,672	1,144,101	1,469,483	27,103	468,664	67,651	1,166,029	79,1	194,656	334,143
6 mos. 233	7,256,775	266,720	7,782,070	59,72,06	40,043	158,569	2,710,670	406,377	63,663,315	81,4	145,755	1,710,416
New York, Chicago & St. Louis..... June 1,691	15,637,282	75,005	12,728,763	335,981	412,607	107,276	888,900	5,831,978	741,502	11,348,327	68,5	5,221,382
New York, New Haven & Hartford..... June 2,073	1499,508	1,833,412	16,567,709	1,676,974	2,467,345	629,900	92,972	2,274,689	130,412	4,224,155	71,1	1,734,110
6 mos. 2,069	20,158,227	10,696,741	34,882,935	3,723,332	5,690,393	486,751	13,717,299	1,194,392	25,650,857	73,5	9,222,078	7,331,081
New York Connecting..... June 20	1,330,089	1,339,241	6,456,064	10,838	7,2401	40,925	1,507,295	5,815	205,363	285	176,119	142,199
New York, Ontario & Western..... June 567	689,231	34,074	789,118	80,664	132,418	15,000	29,391	544,582	22,832	20,2	1,074,737	787,397
6 mos. 567	3,955,845	75,126	3,343,993	39,845	747,355	71,754	1,839,176	143,283	3,210,168	73,9	1,133,825	67,1,966
Norfolk & Western..... June 6 mos. 6 mos.	559,231	51,656	2,431,108	62,550	74,252	129,432	889,824	93,232	1,870,433	76,9	560,674	403,161
Norfolk Southern..... June 932	2,262,798	51,656	422,900	29,170	23,396	80,721	84,762	1,502,342	104,3	62,418	154,342	—3,399
Northern Pacific..... June 6 mos. 6 mos.	419,092	1,500,568	6,439,130	608,509	7,534,109	1,179,714	123,779	1,490,622	1,259,725	3,35,315	55,0	2,305,645
Northwestern Pacific..... June 375	172,464	84,380	2,411,108	42,277	315,252	53,931	857,986	2,554,180	61,8	13,95,078	9,78,779	10,82,378
Oklahoma City-Ada-Atoka..... June 357	2,411,092	9,984	36,499,258	4,128,264	7,534,109	71,479,99	8,809,396	9,809,396	1,605,492	21,58,936	56,8	2,360,630
Pennsylvania Railroad..... June 375	206,136	4,930,128	3,733,186	3,175,885	5,968,350	5,910,843	4,246	4,246	22,672	3,32,514	2,53,034	1,913,250
6 mos. 375	817,356	243,149	1,439,924	33,347	34,253	22,997	3,379,483	65,458,444	87,3	1,210,168	1,210,163	240,620
Pennsylvania Reading Seashore Lines..... June 396	302,019	1,922	22,75,113	670,723	1,025,779	188,293	1,609,622	1,707,241	1,231,129	1,568,561	99,0	206,096
6 mos. 396	220,037	4,930,128	31,66,595	50,036	8,065	5,910,843	5,906,996	9,809,396	1,605,492	21,58,936	56,8	2,102,163
Pittsburgh & Shawmut..... June 413	1,358,018	895,911	2,380,332	36,835,858	34,250,556	34,306,039	44,378	44,378	1,631,772	15,300,962	1,731,156	6,474,671
Pittsburgh & Shawmut & Northern..... June 1,358,018	1,316,69,179	29,838,18	18,783,949	15,219,255	15,219,255	15,219,255	3,379,483	65,458,444	1,292,147	1,292,147	37,000,381	32,783,140
Pittsburgh & Shawmut & Northern..... June 1,358,018	1,316,69,179	29,838,18	18,783,949	15,219,255	15,219,255	15,219,255	3,379,483	65,458,444	1,292,147	1,292,147	37,000,381	32,783,140
Pittsburgh & Shawmut & Northern..... June 190	517,793	902	527,786	99,118	105,777	8,260	198,147	38,335	449,637	852	78,149	64,735
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Pittsburgh & Shawmut & Northern..... June 190	517,793	902	527,786	99,118	105,777	8,260	198,147	38,335	449,637	852	78,149	64,73

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